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EXECUTIVE SUMMARY

This Management Situation Analysis (MSA) document was prepared as a part of the overall planning process. The MSA provides a description of existing management and what is needed in the future to best manage the public lands.

The MSA comprises four main sections. The first two sections describe the purpose of the document and the laws and policy guiding resource management. **Section 1**, the introduction, outlines the purpose of and explains the need for the MSA, describing the role the analysis will play in the planning process. **Section 2**, Resource Mandates and Authority, reviews the guiding law and policy that the agency follows in managing public lands. This section includes a list of applicable laws, regulations, policies, and guidelines.

Section 3 contains the substance of the MSA, with subsections addressing each resource and resource use. Each subsection provides an account of existing management direction and practices, the existing condition of the resources, and the issues and opportunities to be addressed through this planning effort.

The description of the existing management direction presents the goals and objectives outlined in current land use plans. This includes direction from six management plans, for different areas of the field office, in addition to national guidance as applicable. Existing management outlines what the BLM *is* now doing to manage the resources and uses of the area in relation to changing trends, resources, and natural and social influences. To round out the description of current management, this subsection identifies resource management plan (RMP) and implementation-level management direction and actions.

The final portion of each resource subsection summarizes the issues and opportunities related to that resource. This presentation draws together information from the Bureau of Land Management's (BLM) pre-planning process and public input gathered during the scoping period to articulate what will need to be addressed as alternatives are developed and the RMP is completed.

Section 4 follows up on the issues identified in each resource subsection by outlining the planning criteria that will be used to help evaluate the alternative approaches to managing the resources. Using these criteria, the BLM will work to develop an RMP that is good for the land, good for the people, and legally defensible.

1.0 INTRODUCTION

The Bureau of Land Management (BLM) Richfield Field Office (RFO) has initiated the planning process to develop a Resource Management Plan (RMP) for approximately 2.1 million acres of public lands and resources in Sanpete, Sevier, Piute, and Wayne counties; portions of Garfield County; and the mineral estates on portions of land managed by the Uinta, Fishlake, Manti LaSal, and Dixie National Forests (see Map 1). This plan combines six existing land use plans (LUP) into a single plan. An Environmental Impact Statement (EIS) will be prepared as part of this project.

The management of public lands and Federal mineral estate within the RFO boundaries is the subject of this document. Areas within the RFO administered by other Federal agencies, such as the U.S. Forest Service (USFS), the U.S. Bureau of Reclamation (USBR), and the National Park Service (NPS) and State agencies, including School Institutional Trust Lands Administration (SITLA), Utah Division of Wildlife Resources (UDWR), and Utah Division of Parks and Recreation (UDPR), are not the subject of this document or the current RMP planning effort. Additionally, planning decisions and descriptions in this document do not apply to private lands.

1.1 PURPOSE AND NEED FOR A NEW RICHFIELD RESOURCE MANAGEMENT PLAN

The Federal Land Policy and Management Act of 1976 (FLPMA) requires that BLM "develop, maintain, and, when appropriate, revise land use plans" (43 United States Code [U.S.C.] 1712 (a)). BLM has deemed it necessary to revise the six existing LUPs for the RFO and prepare a single RMP. An RMP is a set of comprehensive long-range decisions concerning the use and management of resources administered by BLM. In general, an RMP accomplishes two objectives:

- Provides an overview of goals, objectives, and needs associated with public lands management
- Resolves multiple-use conflicts or issues associated with those requirements that drive the preparation of the RMP.

The RFO is currently managed under six LUPs: Mountain Valley Management Framework Plan (MFP) (1981); Cedar-Beaver-Garfield-Antimony RMP (1986); Henry Mountains MFP (1982); Parker Mountain MFP (1983); Forest MFP (1977); and San Rafael RMP (1991). These six plans, completed between 11 and 25 years ago, are largely outdated and not consistent. This planning process will create one RMP that will standardize and update the management of public land resources in the RFO.

1.2 PURPOSE AND USE OF THE MANAGEMENT SITUATION ANALYSIS

The Management Situation Analysis (MSA) is a summary document that describes the physical and biological characteristics and condition of the resources within the RFO and how these resources are currently being managed. An analysis of the resource conditions and capabilities provides a reference for developing LUPs. This document represents an early component of the resource management planning process. The MSA is not a comprehensive, detail-oriented document, nor does it represent extreme details about various resources. It is intended to provide a summary analysis of existing management practice, including direction from existing plans and agency policy.

1.3 SYNOPSIS OF THE MAJOR PLANNING PROCESS STEPS

The BLM resource management planning process, explained in 43 CFR 1600, BLM 1601 Manual, and BLM Land Use Planning Handbook (H-1601-1), falls within the framework of the National Environmental Policy Act of 1969 (NEPA) environmental analysis and decision-making process described in the Council on Environmental Quality (CEQ) regulations of 40 CFR 1500-1508, the

Department of the Interior NEPA Manual (516 DM 1-7), and the BLM NEPA Handbook H-1790-1. This MSA is a planning precursor to developing potential alternatives, as required by NEPA regulations.

1.4 CONSTRAINTS/CONSISTENCY REQUIREMENTS WITH OTHER ENTITIES

BLM LUPs and amendments must be consistent with officially approved or adopted resource-related plans of Indian tribes, other Federal agencies, and State and local governments to the extent practical, given that BLM LUPs must also be consistent with the purposes, policies, and programs of FLPMA and other Federal laws and regulations applicable to public lands (see 43 CFR 1610.3-2 (a)). If these other entities do not have officially approved or adopted resource-related plans, then BLM LUPs must, to the extent practical, be consistent with their officially approved and adopted resource-related policies and programs. This consistency will be accomplished so long as BLM LUPs are consistent with the policies, programs, and provisions of public land laws and regulations (see 43 CFR 1610.3-2 (b)).

Before BLM approves proposed RMP decisions, the Governor(s) must have 60 days to identify inconsistencies between the proposed plan and State plans and programs and to provide written comments to the BLM State Director. (The BLM and the State may mutually agree on a shorter review period satisfactory to both. If the Governor does not respond within this period, it is assumed that the proposed RMP decisions are consistent. If the Governor recommends changes in the proposed plan or amendment that were not raised during the public participation process, the State Director shall provide the public with an opportunity to comment on the recommendations (see 43 CFR 1610.3-2 (e)). This public comment opportunity will be offered for 30 days and may coincide with the 30-day comment period for the Notice of Significant Change. If the State Director does not accept the Governor's recommendations, the Governor has 30 days to appeal in writing to the BLM Director (see 43 CFR 1610.3-2(e)).

2.0 RESOURCE MANDATES AND AUTHORITY

The foundations of public land management are located in the mandates and authorities provided in laws, regulations, and executive orders. These statements of Federal policy direct BLM concerning management of public lands and resources. The U.S. Congress has acknowledged that the appropriate use of these resources requires proper planning. BLM's planning process (as described in 43 CFR 1600) is authorized and mandated through two important laws.

- **Federal Land Policy and Management Act of 1976** states that BLM "shall, with public involvement…develop, maintain, and when appropriate, revise land use plans" (43 U.S.C. 35 Section 1712 (a)). In addition to Federal direction for planning, FLPMA declares the policy of the United States concerning the management of Federally owned land administered by BLM. Key to this management policy is the direction that BLM "shall manage the public lands under principles of multiple use and sustained yield, in accordance with the [developed] land use plans" (43 U.S.C. 35 Section 1732 (a)). The commitment to multiple-use will not mean that all land will be open for all uses. Some uses may be excluded on some land to protect specific resource values or uses, as directed by FLPMA (43 U.S.C. 35 Sections 1712 (c) (3)). Any such exclusion, however, will be based on laws or regulations or be determined through a planning process subject to public involvement. In writing and revising LUPs, FLPMA also directs BLM to coordinate land use activities with the planning and management of other Federal departments and agencies, State and local governments, and Indian Tribes. This coordination, however, is limited "to the extent [the planning and management of other organizations remains] consistent with the laws governing the administration of the public lands" (43 U.S.C. 35 Section 1712 (c) (9)).
- In the **National Environmental Policy Act of 1969**, the Congress directs "all agencies of the Federal Government…[to]…utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment" (42 U.S.C. 55 Section 4332 (2A)). Because the development of a new RMP may cause impacts to the environment, NEPA regulations require the analysis and disclosure of potential environmental impacts in the form of an EIS. The EIS will examine a range of alternatives, including a No Action Alternative, to resolve the issues in question. Alternatives should represent complete, but alternate means of satisfying the identified purpose and need of the EIS and of resolving the issues. The Richfield RMP/EIS is being prepared using the best available information.

In addition to these acts, management of public land and resources is authorized and directed through several resource and resource use specific laws, regulations, and executive orders. The direction from these sources is refined and made department- and bureau-specific through agency documents such as Instruction Memoranda (IM), Information Bulletins (IB), and manuals and handbooks.

Following are some of the documents that direct the management of public land and resources.

2.1 LAWS, REGULATIONS, AND ORDERS

- Act of May 24, 1928 (airport leases)
- Airport and Airways Improvement Act, (49 U.S.C. 47125 *et seq.*)
- American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)
- Antiquities Act of 1906 (16 U.S.C. 431–433)
- Appropriations Act of 1952, McCarran Amendment
- Archeological Resources Protection Act of 1979, as amended (16 U.S.C. 470)

- Classification and Multiple Use Act of September 1964, in accordance with 43 CFR 2400
- Clean Air Act, as amended (42 U.S.C. 7418)
- Color of Title Act, as amended (43 U.S.C. 1608 *et seq*.)
- Colorado River Basin Salinity Control Act of 1974
- Combined Hydrocarbon Leasing Act of 1981
- Desert Land Entry Act, as amended (43 U.S.C. 321 *et seq*.)
- Economy Act of 1932, as amended
- Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.)
- Federal Cave Resources Protection Act of 1988 (16 U.S.C. 4301 *et seq*.)
- Federal Coal Leasing Amendments Act of 1976 (30 U.S.C. 201)
- Federal Water Pollution Control Act [commonly referred to as the Clean Water Act], as amended (33 U.S.C. 1251–1387)
- Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq*.)
- General Mining Law of 1872, as amended (30 U.S.C. 21 *et seq*.)
- Healthy Forests Restoration Act of 2003
- Historic Sites Act of 1935 (16 U.S.C. 461)
- Homestead Act of 1862 (Although repealed in 1976, the effects of this act are visible and impact some management decisions.)
- Migratory Bird Conservation Act of 1979 (16 U.S.C. 715)
- Mineral Leasing Act of 1920, as amended (30 U.S.C. 181 *et seq*.)
- Mining and Mineral Policy Act of 1970 (30 U.S.C. 21a)
- National Historic Preservation Act, as amended (16 U.S.C. 470)
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001)
- Onshore Oil and Gas Leasing Reform Act of 1987 (30 U.S.C. 181 *et seq*.)
- Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901)
- Recreation and Public Purposes Act of 1926, as amended (43 U.S.C. 869 *et seq*.)
- Reservoir Salvage Act of 1960 (16 U.S.C. 469)
- Safe Drinking Water Act of 1974 (42 U.S.C. 201)
- Sikes Act (16 U.S.C. 670 *et esq*.)
- Soil Conservation and Domestic Allotment Act of 1935, as amended
- Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 *et seq*.)
- Taylor Grazing Act of 1934 (43 U.S.C. 315)
- Utah State Indemnity Sections 2275 and 2276 of the Revised Statutes, as amended (43 U.S.C. 851, 852)
- Water Resources Development Act of 1974
- Water Resources Planning Act of 1965, as amended
- Water Resources Research Act of 1954, as amended
- Watershed Protection and Flood Control Act of 1954
- Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271 *et seq*.)
- Wild Free-Roaming Horses and Burros Act (16 U.S.C. 30)
- Wilderness Act, as amended (16 U.S.C. 1131 *et seq*.)
- Executive Orders 10046, 10175, 10234, 10322, 10787, and 10890 (Authorize the transfer of certain lands from the Department of Agriculture to the Department of the Interior for use, administration, or exchange under the Taylor Grazing Act of 1934)
- Executive Order 11288 (water quality management and pollution abatement plans)
- Executive Order 11507 (protect and enhance the quality of air and water resources)
- Executive Order 11514 as amended by Executive Order 11991 (Protecting and enhancing the quality of the nation's environment to sustain and enrich human life)
- Executive Order 11593 (Protection and Enhancement of the Cultural Environment)
- Executive Order 11644 (Use of Off-Road Vehicles [ORV] on the Public Lands)

- Executive Order 11738 (Enforce the Clean Air Act and the Clean Water Act in the procurement of goods, materials, and services)
- Executive Order 11752 (Protect and enhance the quality of air, water, and land resources through compliance with applicable Federal, State, interstate, and local pollution standards)
- Executive Order 11987 (Exotic Flora and Fauna)
- Executive Order 11988 as amended by Executive Order 12148 (Floodplain Management)
- Executive Order 11989 (ORVs on Public Lands)
- Executive Order 11990 (Protection of Wetlands)
- Executive Order 12088 (Federal Compliance with Pollution Control Standards)
- Executive Order 12322 requires that any report, proposal, or plan relating to a Federal or Federally assisted water and related land resources project or program must be submitted to the Director, Office of Management and Budget (OMB), before submission to the Congress
- Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)
- Executive Order 13007 (Indian Sacred Sites)
- Executive Order 13084 (Consultation and Coordination with Indian Tribal Governments)
- Executive Order 13112 (Invasive Species)
- Executive Order 13186 (Migratory Birds)
- President's Letter of May 26, 1974 (Creates the Interagency Committee on Water Resources and establishes interagency participation in river basin planning)
- Secretarial Order 3175 (incorporated into the Departmental Manual at 512 DM 2)
- Secretarial Order 3206 (American Indian Tribal Rights, Federal–Tribal Trust Responsibilities, and the Endangered Species Act)
- Regional Haze Regulation (Federal Register/Vol. 64, No. 126; 35714 July 1, 1999)
- 43 CFR Chapter 2 Parts 1000 – 9999 (Federal Regulations for the BLM)
- 36 CFR, 62 (Addresses procedures to identify, designate, and recognize National Natural Landmarks)
- The U.S. Water Resource Council published Floodplain Guidelines on February 10, 1978, after being directed to establish guidelines for floodplain management and preservation
- Arizona has promulgated water quality standards through EPA on the Colorado River at the Utah state line to limit the amount of total phosphates and nitrates (40 CFR 131.31)
- The Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management (*Federal Register*, October 18, 2000)
- National Ambient Air Quality Standards (40 CFR Parts 50.4–50.12)
- New Source Review (40 CFR Part 51.307)
- Regional Haze Rule (40 CFR 51)
- "Treatment as a State" Regulation (40 CFR Part 71)
- National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61)

2.2 INSTRUCTION MEMORANDA, INFORMATION BULLETINS, MANUAL SECTIONS, HANDBOOKS, AND TECHNICAL NOTES

- IM 78-410 (Protection of Wetlands and Riparian Areas)
- IM 78-523 (Compliance with BLM Interim Floodplain Management Procedures)
- IM 87-261 (Implementation of the Riparian Area Management Policy)
- IM 99-085 (Federal Multi-Agency Source Water Agreement)
- IM 99-123 (Reporting to the Colorado River Salinity Control Forum)
- IM 2000-179 (Funding of Water-Related Restoration and Cleanup Projects on Private and Other Non-BLM Lands)
- IM 2002-174 (Oil and Gas Leasing Stipulations)
- IM 2003-035 (Implementing the President's Healthy Forests Initiative)

- IM 2003-137 (Integration of the Energy Policy and Conservation Act [EPCA] Inventory Results into Land Use Planning and Energy Use Authorizations)
- IM 2003-158 (Memorandum of Understanding (MOU) between Bureau of Land Management and the Animal and Plant Health Inspection Service (APHIS) Addressing the Management of Grasshoppers and Mormon Crickets)
- IM 2003-169 (Use of the Economic Profile System in Planning and Collaboration)
- IM 2003-195 (Rescission of National Level Policy Guidance on Wilderness Review and Land Use Planning)
- IM 2003-226 (Fire Program Analysis System—Development of Fire Management Objectives)
- IM 2003-233 (Integration of the EPCA Inventory Results into the Land Use Planning Process)
- IM 2003-238 (Guidance for Data Management in Land Use Planning)
- IM 2003-274 (BLM Implementation of the Settlement of Utah v. Norton Regarding Wilderness Study)
- IM 2003-275 (Consideration of Wilderness Characteristics in Land Use Planning [Excluding Alaska])
- IM 2004-005 (Clarification of OHV Designations and Travel Management in the BLM Land Use Planning Process)
- IM 2004-007 (Land Use Plan and Implementation Plan Guidance for Wildland Fire Management)
- IB 98-116 (Clean Water Action)
- IB 2002-101 (Cultural Resource Information)
- IB 2003-074 (Sample Filing Plan for Land Use Planning Records)
- IB 2003-113 (The Manager's Role in the Land Use Planning Process)
- IB 2004-005 (Extension of FY 2002 Instruction Memoranda)
- BLM-M-1601 (Land Use Planning)
- BLM-M-1613 (Areas of Critical Environmental Concern)
- BLM-M-4180 (Rangeland Health Standards)
- BLM-M-4700 (Wild Horse and Burro Management)
- BLM-M-6740 (Establishes policy and procedures for the identification, protection, maintenance, and management of fresh, brackish, and saline waters and wetland areas)
- BLM-M-6800 (Special Status Species Management)
- BLM-M- 7100 (Defines the policy of BLM's Soil Resource Management Program.)
- BLM-M-7120 (Provides guidelines for maintaining Bureau watershed improvements constructed on public lands)
- BLM-M-7150 (Provides guidance in the conduct and maintenance of water utilization and development, water quality, water yield and timing, and water rights)
- BLM-M-7160 (Provides general guidance for preventing water and wind erosion)
- BLM-M-7180 (Relates the restoration of disturbed areas directly to policy on erosion control, protection, maintenance of environmental quality, rehabilitation of mined lands (BLM 3509 and 3605), and prevention of erosion in road construction, etc.)
- BLM-M-7210 (Provides the basic framework for soil and watershed activities)
- BLM-M-7221 (Describes the policies, responsibilities, and procedures used to incorporate floodplain management into BLM activities)
- BLM-M-7240 (Describes BLM policy to protect, maintain, restore, and enhance the quality of water on public lands so that its utility for other dependent ecosystems will be maintained equal to or above legal water quality criteria)
- BLM-M-7250 (Establishes policy and guidance to acquire, perfect, and protect water rights necessary for multiple use management)
- BLM-M-7315-7317 (Provides procedures for inventory and analysis of ground and surface water inventories and of erosion and sediment reduction)
- BLM-M-7322 (Provides procedures for analyzing watershed problems and developing plans for improving watershed conditions)

- BLM-M-7410 (Provides criteria, standards, and techniques for land treatment)
- BLM-M-8100 (Cultural Resource Management)
- BLM-M-8110 (Identifying Cultural Resources)
- BLM-M-8120 (Protecting Cultural Resources)
- BLM-M-8130 (Utilizing Cultural Resources for Public Benefit)
- BLM-M-8160 (Native American Coordination and Consultation)
- BLM-M-8270 (Paleontological Resource Management)
- BLM-M-8340 (OHV Management)
- BLM-M-8531 (Wild and Scenic Rivers)
- BLM-M-9210 (Fire Management Policy)
- BLM-H-1601 (Land Use Planning)
- BLM-H-1742 (Emergency Fire Rehabilitation)
- BLM-H-1790 (NEPA Handbook)
- BLM-H-2200 (Land Exchanges)
- BLM-H-4750 (Wild Horse and Burro Management)
- BLM-H-6310-1 (Wilderness Inventory and Study Procedures)
- BLM-H-4180-1 (Rangeland Health Standards)
- BLM-H-8160-1 (General Procedural Guidance for Native American Consultation)
- BLM-H-8270-1 (Paleontological Resource Management)
- BLM-H-8410-1 (Visual Resource Inventory)
- BLM-H-8550-1 (Interim Management Policy and Guidelines for Lands Under Wilderness Review [1995])
- BLM-H-9214-1 (Prescribed Fire Management)
- UT 97-73 (Implementing Standards for Rangeland Health and Guidelines for Grazing Management on BLM Lands in Utah)
- UT 98-28 (Riparian Performance Measures)
- UT 2000-081 (Handling Applications of Municipalities Water Source Protection Plans)
- UT 2001-092 (Documentation for Actions Involving Lands with Wilderness Concerns)
- Bureau of Land Management, Riparian Area Management Policy, January 1987
- Technical Notes 346: Erosion condition classification system
- Technical Notes 364: 1980-82 salinity status report: results of Bureau of Land Management studies on public lands in the Upper Colorado River Basin
- Technical Notes 365: Hydrology and USLE: application to rangelands
- Technical Notes 369: Considerations in rangeland watershed monitoring
- Technical Notes 371: Determining hydrologic properties of soil
- Technical Notes 372: Stream discharge measurement using a modified technique
- Technical Notes 373: Diffuse-source salinity: mancos shale terrain
- Technical Notes 405: A framework for analyzing the hydrologic conditions of watersheds

2.3 APPLICABLE UTAH STATE LAWS AND REGULATIONS

- Utah Code, Title 19, Chapter 2, Air Conservation Act
- Utah Air Conservation Rule R307-204, Smoke Management
- Utah Air Conservation Rule R307-406, Visibility
- Utah Air Conservation Rule R307-401-6 (Conditions for Ordering and Approval Order)
- Utah Air Conservation Rule R307-405-4 (Prevention of Significant Deterioration [PSD] Increments and Ceilings)
- Utah Air Conservation Rule R307-405-6 (PSD Areas–New Sources and Modifications)
- Utah Air Conservation Rule R307-410-3 (Modeling of Criteria Pollutants in Attainment Areas)
- Utah Air Conservation Rule R307-410-4 (Documentation of Ambient Air Impacts for Hazardous Air Pollutants)

- Utah Air Conservation Rule R307-205-3 (Emission Standards for Fugitive Dust)
- Utah Air Conservation Rule R307-205-4 (Emission Standards for Roads)
- Utah Code, Title 73, Water and Irrigation.
- Utah Administrative Rule R309-605. Drinking Water Source Protection for Ground-Water Sources
- Utah Administrative Rule R317-2. Standards of Quality for Waters of the State
- Utah Administrative Rule R317-6. Ground Water Quality Protection
- Utah Administrative Rule R317-8. Utah Pollution Discharge Elimination System (UPDES)
- Utah Nonpoint Source Management Plan (October 2000)
- Utah Nonpoint Source Management Plan for Hydrologic Modifications (March 1995)
- Utah Nonpoint Source Management Plan for Silviculture Activities (July 1998)
- The Utah Noxious Weed Act
- Utah Strategic Riparian Plan

2.4 MEMORANDA AND AGREEMENTS

- Master MOU with U.S. Fish and Wildlife Service (USFWS) dated December 1986
- The rangeland programmatic memorandum of agreement among BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers
- The Federal coal management programmatic memorandum of agreement among BLM, Office of Surface Mining, U.S. Department of the Interior, U.S. Geological Survey (USGS), and the Advisory Council on Historic Preservation
- State Protocol Agreement Between the Utah State Director of the BLM and the Utah State Historic Preservation Office (SHPO) and the Programmatic Agreement Among the BLM, the Advisory Council on Historic Preservation, and the National Conference of SHPOs
- Interagency MOU between the Department of the Interior-BLM and the Department of Agriculture in 1995 (60F26045-48, 5/16/95)
- MOU between the BLM and the NPS regarding grazing in the Glen Canyon National Recreation Area (September 4, 1984)
- Supplement No. 1 to an MOU between the Utah State Offices (USO) of NPS and BLM dated September 26, 1973
- An inter-district agreement in reference to vegetation allotment to livestock, wild horse, burros, and wildlife habitat management between the Moab and Richfield District Managers, signed in 1980, outlines which grazing allotments will be administered by which district
- MOU Concerning Wild and Scenic River Studies in Utah Among the State of Utah and Intermountain Region Forest Service and Utah Bureau of Land Management and Intermountain Region National Park Service (1997)

2.5 PLANNING DOCUMENTS APPLICABLE TO THE RICHFIELD FIELD OFFICE

The direction provided by the various documents mentioned above is applied to specific resources and areas through RMPs. These plans apply Federal policy to resources at a more manageable level.

BLM Land Use Plans

- Forest Planning Unit (FPU) MFP (1977)
- Mountain Valley Planning Area MFP (1981)
- Henry Mountains Planning Area MFP (1982)
- Parker Mountain Planning Unit MFP (1983)
- Cedar-Beaver-Garfield-Antimony RMP (1986)
- San Rafael RMP (1991)

Mineral Leasing Activity Plans

- Oil and Gas Leasing Environmental Assessment (EA) (1988)
- Designation of Hydrocarbon Lease Categories (1984)

Recreation Management Plans

- Henry Mountains ORV Implementation Plan
- Parker Mountain ORV Implementation Plan
- Mountain Valley ORV Implementation Plan
- FPU OHV Implementation Plan, 1983
- Cedar-Beaver-Garfield-Antimony OHV Implementation Plan

Habitat Plans

- Parker Mountain Habitat Management Plan (HMP)
- Henry Mountains Desert Bighorn Sheep HMP
- Antimony HMP

Endangered Species Recovery Plans

- Maguire Daisy Recovery Plan, 1995
- Mexican Spotted Owl Recovery Plan, 1995
- Utah Reed-Mustards Recovery Plan, 1994
- Last Chance Townsendia Recovery Plan, 1993
- Northern States Bald Eagle Recovery Plan, 1983
- Wright Fishhook Cactus Recovery Plan, 1985
- American Peregrine Falcon Recovery Plan, 1984
- Southwest Willow Flycatcher Recovery Plan, 2001
- Utah Prairie Dog Recovery Plan, 1991
- Utah Prairie Dog Interim Conservation Strategy, 1997

Existing Environmental Assessments and Impact Statements

- Utah BLM Statewide Wilderness EIS, 1990
- Utah Combined Hydrocarbon Leasing Regional EIS, 1984
- Henry Mountains Grazing EIS, 1983
- Parker Mountain Grazing EIS, 1979
- Mountain Valley Grazing EIS, 1980
- USFS/BLM Motorized Events EA, 2001 (J-050-01-024)

Other Policy and Guiding Direction

- Federal Wildland Fire Policy
- Colorado River Basin Compact
- EPA Interim Air Quality Policy on Wildland and Prescribed Burning
- Normal Fire Rehabilitation Plan (NFRP)
- Emergency Stabilization and Rehabilitation Plan (ESRP)
- Burned Area Emergency Rehabilitation Plan (BAER)
- BLM Wildlife 2000
- Riparian-Wetlands Initiative for the 1990s
- Strategy for Future Waterfowl Habitat Management on Public Lands

- Utah Standards and Guidelines for Rangeland Health, 1997
- National Management Strategy for Motorized OHV Use on Public Lands, 2001
- Utah BLM Management Strategy for Motorized OHV Use on Public Lands, 2000
- National Mountain Bicycling Strategic Action Plan, 2002
- Natural Resource Conservation Council Statewide OHV Trail Signing Standards, 2001.

3.0 RESOURCES AND RESOURCE USES

This section addresses those resources and resource uses managed by the BLM RFO. Resource/resource use sections are separated into subsections containing the following information:

- Current LUP Direction
- Existing Management
- Resource Condition
- Issues and Opportunities.

For each resource and resource use, a brief introduction will precede subsections containing the above-mentioned information. The following few paragraphs provide a more thorough description of what information these subsections will present.

Current Land Use Plan Direction

Resources in the RFO are currently managed according to several goals and objectives in existing resource management and MFPs, as well as BLM manuals and handbooks. Prominent sources of resource objectives are the LUPs associated with current Field Office management. The planning boundaries for these plans are shown on Map 2. The most current LUP directing the management of resources and resource uses in the RFO include the following:

- FPU MFP (1977)
- Mountain Valley Planning Area MFP (1981)
- Henry Mountains Planning Area MFP (1982)
- Parker Mountain Planning Unit MFP (1983)
- Cedar-Beaver-Garfield-Antimony Resource Area RMP (1986)
- San Rafael Resource Area RMP (1991).

Other sources used to determine existing goals and objectives include decisions and statements from RFO management as well as EISs and other management documents. Management direction from the LUPs is organized with plans appearing chronologically.

Existing Management

Existing management outlines what BLM *is* doing to manage the resources and uses of the area in relation to changing trends, resources, and natural and social influences. Source material was obtained from existing LUPs and various other, often more recent, management documents pertaining specifically to various resources and resource uses. As a result, this section identifies RMP and implementation level management direction and actions to complete the picture of what BLM is currently doing.

Resource Condition

This section summarizes the existing resource condition in the Field Office that is the result of existing management practices. The various resource and resource use sections contain a discussion of what is "on the ground" in the RFO. Although all resources are described to some degree, emphasis is placed on those resources that are managed by BLM or on which BLM's management actions have some influence. Further, emphasis is placed on those resources that are or are anticipated to be impacted by one or more of the management alternatives to be implemented by the BLM in response to changes in land use related to the new Richfield RMP.

Issues and Opportunities

This section combines information from the BLM's pre-planning process with input from the public gathered through scoping. The section pulls together the issues in an articulation of what may need to be addressed as alternatives are developed and the RMP is completed. For some resources, a brief analysis of demands placed on specific resources is included to forecast what issues may be of most relevance.

Public involvement in the Richfield RMP process is important to the success of the plan. The RMP process is designed to be an open, collaborative process that will address the concerns of interested parties. The initial phase of public involvement in the planning process was the scoping conducted through public meetings and an extended comment period for receiving written comments. During the scoping period, five public meetings were held where a large amount of input was received. Additionally, written scoping comments were accepted from November 2001 through April 2002. More than 1,600 unique comments were received. Comments received during this time were categorized by major theme and added to a database for analysis and use in the planning process. The results of the scoping process were documented in the Richfield RMP Scoping Report. The Scoping Report summarizes and analyzes all of the comments received and highlights issues for consideration in the RMP. The scoping report is available at the BLM RFO, BLM USO, and on-line at www.richfieldrmp.com. Further direction for this section has been obtained from BLM planning documents such as the Special Evaluation Report and Pre-Plan Analysis.

Miscellaneous Issue Areas

Two issue areas identified through internal and public scoping did not fit well into any of the resource and resource uses subsections: access and administration. Consequently, these two issue areas will be addressed at this point.

Access Issues

Access to the various land and resources in the RFO is an issue that could be addressed in the RMP. Access issues are cross-resource issues that may require the attention of the BLM's inter-disciplinary team to be addressed appropriately. The system of roads and trails that provides motorized access to the area should be managed both to allow use of the area and to protect the various resources. Important interests associated with managing access include motorized recreation, access to range improvements, dispersed camping, signage, wildlife interactions, watershed values, special designations, and user conflict. The RMP process could include a Richfield Travel Plan that will specifically address this issue.

Access is a key component of many other resource uses. Access includes the network of roads, trails, and rights of way throughout the RFO. Roads, trails, and rights of way are used for commercial and recreational purposes. The demand for access was frequently mentioned in the public scoping process. Many comments indicated that access should remain at historically allowed levels and that any restrictions to motorized access would be inappropriate. Other comments indicated support for limiting travel to designated routes and closing parts of the RFO to motorized travel. Scoping indicated a clear need for signing and marking trails with routes and restrictions to control uses.

Any designations, monitoring, and interpretation should be consistent within the RFO and should be coordinated with adjacent BLM Field Offices. Designations for play areas or authorized trails, such as the Paiute and Great Western Trails, should be analyzed in the EIS.

Administration Issues

Issues related to day-to-day administration of BLM management activities may need to be considered for the various resource uses and in a more general context. The efficiency and effectiveness of planning, management, and coordination with other agencies should be considered as alternative management approaches are considered. Items such as BLM permitting, recreation information, road signage, and policy notification can be considered in the development of alternatives.

Many of the comments received addressed ways in which BLM might improve some of the practices it uses in the administration of the RMP process. Others discussed ways in which BLM might improve general agency management, improve interagency cooperation, or work with other organizations. Comments of this nature were categorized as administrative. Several comments discussed the public involvement process and which opinions should be included in the planning process. Some thought that only local input should have significant weight in the process, whereas others argued that opinions should be sought from a nationwide audience. Nearly all of this type of comment asked for better dissemination of information.

3.1 AIR QUALITY/CLIMATE

This section outlines the existing condition and management of air quality in the RFO. Air quality and climate are factors that impact and are impacted by several resources and potential resource uses. Visibility, air quality standards, and sources of pollution will be addressed in this section. This section will provide decisionmakers with a better understanding of the air quality in the area and how air resources could be impacted from land use decisions.

Air Quality/Climate—Current Land Use Plan Direction

Forest MFP, 1977

- There are no goals or objectives addressing air quality or climate in this plan.

Mountain Valley MFP, 1981

- There are no goals or objectives addressing air quality or climate in this plan.

Henry Mountains MFP, 1982

- There are no goals or objectives addressing air quality or climate in this plan.

Parker Mountain MFP, 1983

- There are no goals or objectives addressing air quality or climate in this plan.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Assure compliance with the Clean Air Act (CAA).
- Maintain compliance with the CAA through application of the NEPA process on a case-by-case basis.

San Rafael RMP, 1991

- BLM will manage actions on public lands to meet air quality standards prescribed by Federal, State, and local laws and will protect existing air quality when feasible.
- The unique visual (air quality) characteristics of four special interest areas (Mexican Mountain, San Rafael Reef, Sids Mountain, and the lower Green River) will be maintained.
- Potential adverse impacts will be mitigated through site-specific actions identified in NEPA documents prepared at the time an action in this area is proposed, through best available control technology as part of the State permitting process and PSD review.

Air Quality/Climate—Existing Management

BLM and BLM-authorized activities are managed to maintain air quality within the thresholds established by the State of Utah Ambient Air Quality Standards and to ensure that those activities continue to keep the area as attainment, meet PSD Class II standards, and protect the Class I airsheds of the National Parks. Potential adverse impacts will be mitigated through site-specific measures identified in NEPA documents prepared at the time an action in the area is proposed. Mitigation will be developed as part of the State permitting process and PSD review.

Air Quality/Climate—Resource Condition

The climate of the RFO is variable and influenced by the complex topography represented within the RFO. Landforms that influence local weather include the Orange Cliffs and flat desert around Hanksville and the more complex mountainous areas of the Henry Mountains, Fish Lake, Boulder Mountains, and Awapa Plateau.

Elevation ranges from about 4,000 feet in the lower valleys to more than 11,500 at the top of Mount Ellen, in the Henry Mountains. The climate is a generally semiarid continental regime characterized by low relative humidity, abundant sunshine, and low to moderate precipitation. Below-normal precipitation and drought are common occurrences. The annual precipitation range is generally less than 5 inches in the lower elevation areas and up to 30 inches or more at the higher elevations. A uniform distribution of precipitation occurs from October through May, averaging a little more than an inch per month. June through September is slightly drier, with an average of about 0.8 inches per month. Moisture evaporation is high because of low humidity, high temperatures, and winds. Map 15 presents the average annual precipitation (AAP) for the RFO. Average maximum temperatures in the area range from 98°F in July to 37°F in January. Average minimum temperatures range from 7°F in January to 61°F in July. The average frost-free period is 130 days at the lower elevations but drops to about 60 days at the higher elevations (Western Regional Climate Center).

Summers are characterized by hot weather in the lower valleys, where maximum temperatures of more than 100 degrees occur during most years at elevations of less than 5,500 feet. Winters are cold, and subzero minimum temperatures are recorded several times a year in most areas at lower elevations.

Snowfall usually is light, commonly less than 10 inches per year at the lower elevations, but occasional storms deposit as much as 2 feet of snow. Snowfall accumulates to an estimated 100 inches or more on the higher mountain slopes.

Strong temperature inversions persist in the lower valleys, and they frequently extend to about 1,000 feet above the valley floors. Above the top of the inversions, temperatures decrease about 3.5 degrees per 1,000-foot increase in elevation.

Ambient Air Quality Standards

Overall air quality in the RFO is good. Based on the region's remoteness and a lack of major urban communities, counties in the RFO are designated as "attainment" or "unclassifiable" with respect to National Ambient Air Quality Standards (NAAQS) for all criteria pollutants and therefore classified as a Class II air quality area (40 CFR Part 81.345). As of July 2002, the air quality in the RFO area has not been designated as "non-attainment" for any criteria pollutant. Because the counties are in attainment for all pollutants, the provisions of 40 CFR Part 93, "Determining Conformity of Federal Actions to State or Federal Implementation Plans" and Utah Administrative Code Rule R307-115 do not apply.

The Clean Air Act Amendments (CAAA) of August 7, 1977 (Section 160), identifies the following air quality areas:

- **Class I**—the most restrictive class applies to areas in which practically any change in air quality would be considered significant.
- **Class II**—applies to areas in which deterioration normally accompanying moderate, well-controlled growth would be considered insignificant.
- **Class III**—applies to areas in which deterioration to ambient standards is allowed.

Mandatory Class I designations exist for national parks and wilderness areas. Map 16 displays the Class I and Class II areas within the RFO. Class I areas in the vicinity of the RFO are as follows:

- Arches National Park
- Bryce Canyon National Park
- Canyonlands National Park
- Capitol Reef National Park
- Zion National Park.

The adjacent States of Arizona and Colorado have mandatory Class I airsheds that could be affected by activities on BLM lands. These include Grand Canyon National Park in Arizona and Mesa Verde National Park in Colorado.

Table 3.1-1. National and Utah Ambient Air Quality Standards

Pollutant	Standard Value*	Standard Type
Carbon Monoxide (CO)		
8-hour Average[a]	9 ppm (10 mg/m^3)	Primary
1-hour Average[a]	35 ppm (40 mg/m^3)	Primary
Nitrogen Dioxide (NO_2)		
Annual Arithmetic Mean	0.053 ppm (100 μg/m^3)	Primary & Secondary
Ozone (O_3)		
1-hour Average[b]	0.12 ppm (235 μg/m^3)	Primary & Secondary
8-hour Average**	0.08 ppm (157 μg/m^3)	Primary & Secondary
Lead (Pb)		
Quarterly Average	1.5 μg/m^3	Primary & Secondary
Particulate Matter (PM 10) Particles with diameters of 10 micrometers or less		
Annual Arithmetic Mean	50 μg/m^3	Primary & Secondary
24-hour Average[c]	150 μg/m^3	Primary & Secondary
Particulate Matter (PM 2.5) Particles with diameters of 2.5 micrometers or less		
Annual Arithmetic Mean**	15 μg/m^3	Primary & Secondary
24-hour Average**	65 μg/m^3	Primary & Secondary
Sulfur Dioxide (SO_2)		
Annual Arithmetic Mean	0.03 ppm (80 μg/m^3)	Primary
24-hour Average[a]	0.14 ppm (365 μg/m^3)	Primary
3-hour Average[a]	0.50 ppm (1300 μg/m^3)	Secondary
* Parenthetical value is an approximately equivalent concentration		
** The ozone 8-hour standard and the PM 2.5 standards are included for information only.		
A—Maximum concentration not to exceed more than once per year B—Expected number of exceedance days shall not be more than one per year (3 year average) as determined by Appendix H of 40 CFR Part 50. C—Expected number of exceedance days shall not be more than one per year (3 year average) as determined by Appendix H of 40 CFR Part 50.		

Source: 40 CFR Part 50, July 2000

It is a basic principle of Indian law that tribes have inherent sovereignty over tribal lands. Tribal governments have the responsibility to develop, implement, and manage programs within Indian country. Although no tribes in Utah have approved Tribal Implementation Plans designating tribal lands as Class I airsheds, Section 301(d) of the CAA authorizes eligible tribes to implement their own tribal air programs. The air resources comprising the Navajo, Uintah, and Ouray Reservations should therefore be viewed as potentially sensitive areas.

Prevention of Significant Deterioration of Air Quality

PSD applies to areas of the State designated as attainment or unclassifiable for PM_{10}, SO_2, and NO_2.

Significant deterioration is defined in terms of a system of area classifications and permissible concentration increases called increments. These increments apply to areas within the State designated as attainment or unclassifiable for particulate matter (PM_{10}), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2).

The maximum allowable increases in concentrations in Class I, Class II, and Class III areas are those increments specified in Utah Air Conservation Rule R307-405-4. In Class I areas, which are the most highly protected areas, only small increases in predicted PM_{10}, SO_2, and NO_2 concentrations are permitted. In Class II areas, larger concentration increases would be permitted. Class III areas, which are the least protected, assure that any increase will not result in concentrations that are higher than the lowest applicable NAAQS.

Table 3.1-2. Allowable PSD Increments ($\mu g/m^3$)

Pollutant	Time Period	Class I	Class II	Class III
PM_{10}	Annual Arithmetic Mean	4	17	34
	24-Hour Maximum	8	30	60
SO_2	Annual Arithmetic Mean	2	20	40
	24-Hour Maximum	5	91	182
	3-Hour Maximum	25	512	700
NO_2	Annual Arithmetic Mean	2.5	25	50

Source: UACR R307-405-4

PSD requires that certain new, major stationary sources and major modifications be subject to a preconstruction review, which includes an ambient air quality analysis. The process of reviewing proposals to construct major new sources or modifications is the principal means of carrying out the PSD program.

New Source Review

Sources having emissions below the PSD major source threshold are subject to New Source Review (NSR) permitting with the State of Utah. Such sources are required to demonstrate that they will not cause or contribute to a violation of the ambient air quality standards (Utah Air Conservation Rule R307-405-6).

Existing Air Quality

The Utah Division of Air Quality (UDAQ) is responsible for monitoring air quality in Utah. Measurements are typically taken in urban areas where ambient pollution levels are expected to be the highest. As a result, no routine monitoring occurs in the RFO area.

Air quality in the vicinity of the RFO is generally good to excellent due primarily to low population numbers and limited industrial development. The U.S. Environmental Protection Agency (EPA) has designated the region as a Class II airshed. This classification permits moderate deterioration that normally accompanies well-controlled growth. Three Class I areas are in the vicinity of the RFO: Arches National Park, Capitol Reef National Park, and Canyonlands National Park. Class I areas are those in which practically any air quality deterioration would be considered significant.

The existing good air quality is typical of a largely undeveloped region in the western United States. Regional concentrations of SO_2, PM_{10}, and nitrogen oxides (NOx) are generally well below the NAAQS. No major air pollution sources are found nor have polluted airsheds been identified within the RFO.

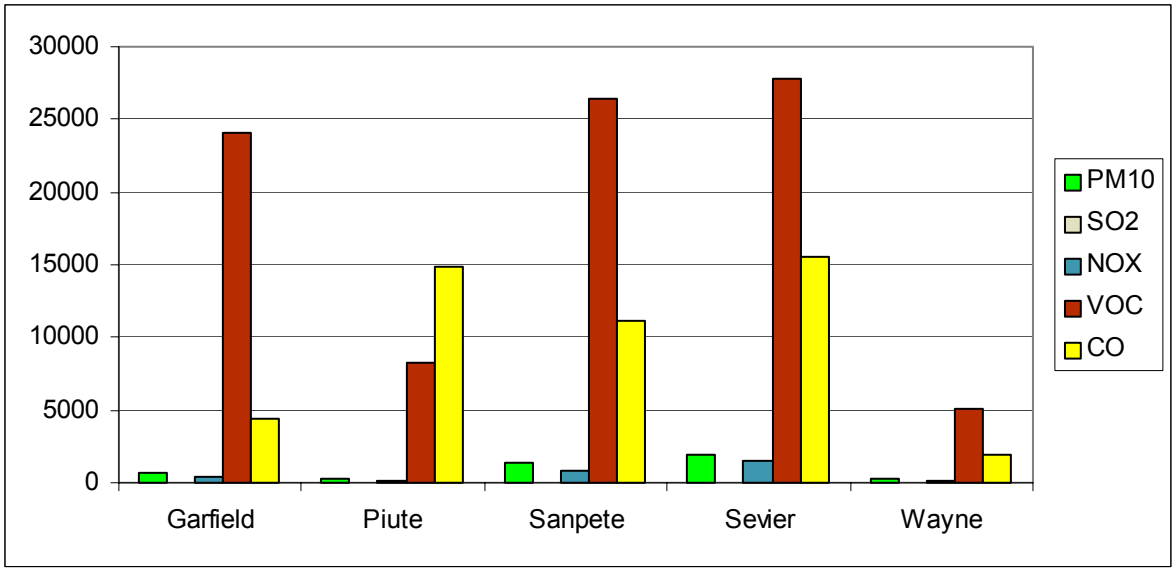
Atmospheric visibility is generally quite good. Visual-range estimated measurements made by the NPS and BLM show a mean visual range of 125 to 175 miles. The mean annual visual range is about 150 miles; however, visual ranges can vary extremely from ¼ to more than 300 miles during the year. The good visibility is the result of low regional SO_2, and ambient suspended particulate concentrations.

Sources of Air Pollution

The most recent UDAQ Annual Report (1996) was consulted to determine the sources of pollution as well as emission rates for those counties in the RFO. The report provided the following observations:

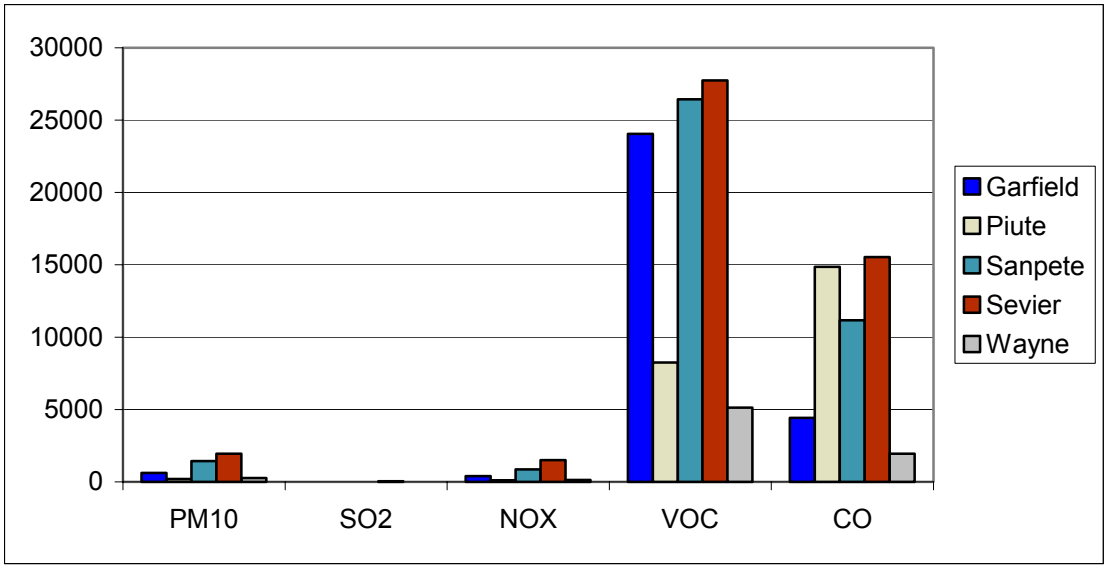
- There are no major sources of air pollution in any of the counties in the RFO.
- The greatest amount of air pollution emissions in the area result from those point sources located in Sevier County.
- There are no point sources listed for Garfield, Piute, or Wayne counties.
- The primary air pollutant in the counties in the RFO is volatile organic compounds (VOC) followed by carbon monoxide (CO), PM_{10}, NOx, and SO_2.
- Area sources and biogenic emissions account for the most emissions in the counties.

Figure 3.1-1. 1996 Summary of Total Emissions by County (Tons Per Year)



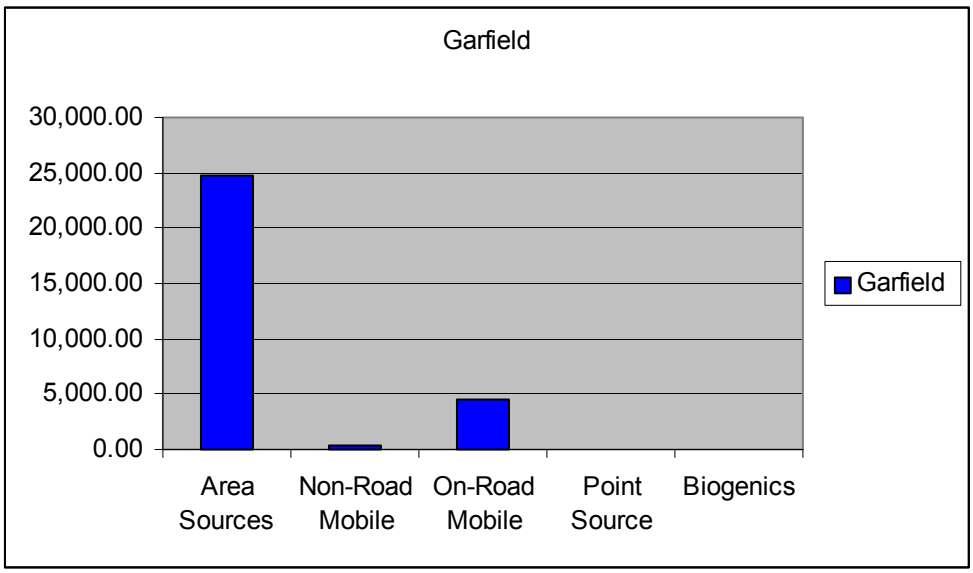
Source: Utah Division of Air Quality Annual Report (1996)

Figure 3.1-2. 1996 Summary of Total Emissions by County (Tons Per Year)



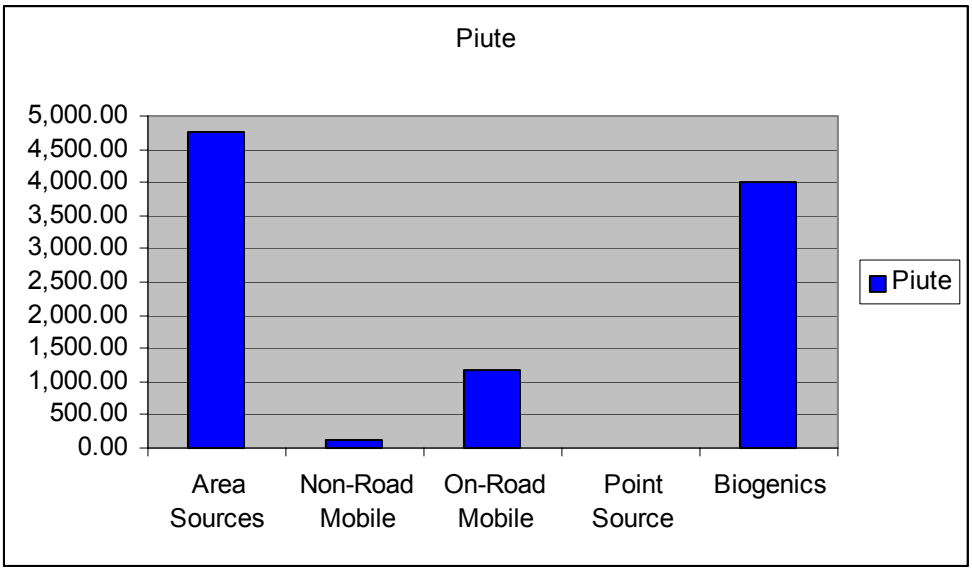
Source: Utah Division of Air Quality Annual Report (1996)

Figure 3.1-3. 1996 Summary of Emissions by Source—Garfield County



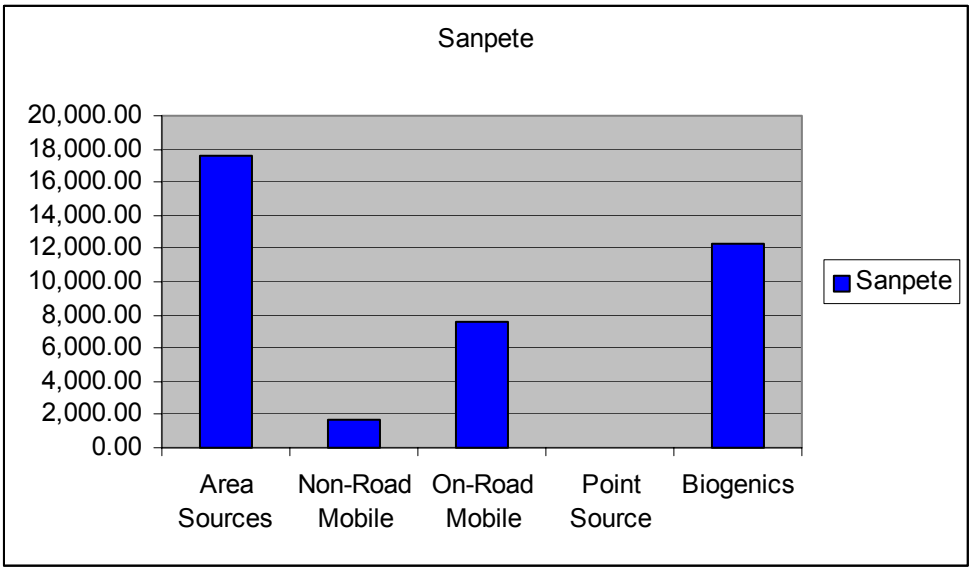
Source: Utah Division of Air Quality Annual Report (1996)

Figure 3.1-4. 1996 Summary of Emissions by Source—Piute County



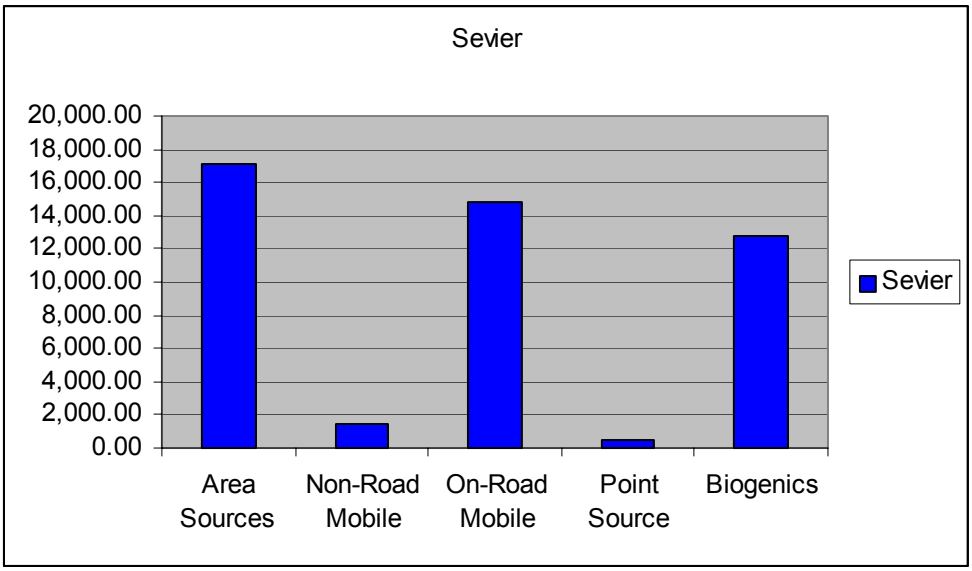
Source: Utah Division of Air Quality Annual Report (1996)

Figure 3.1-5. 1996 Summary of Emissions by Source—Sanpete County



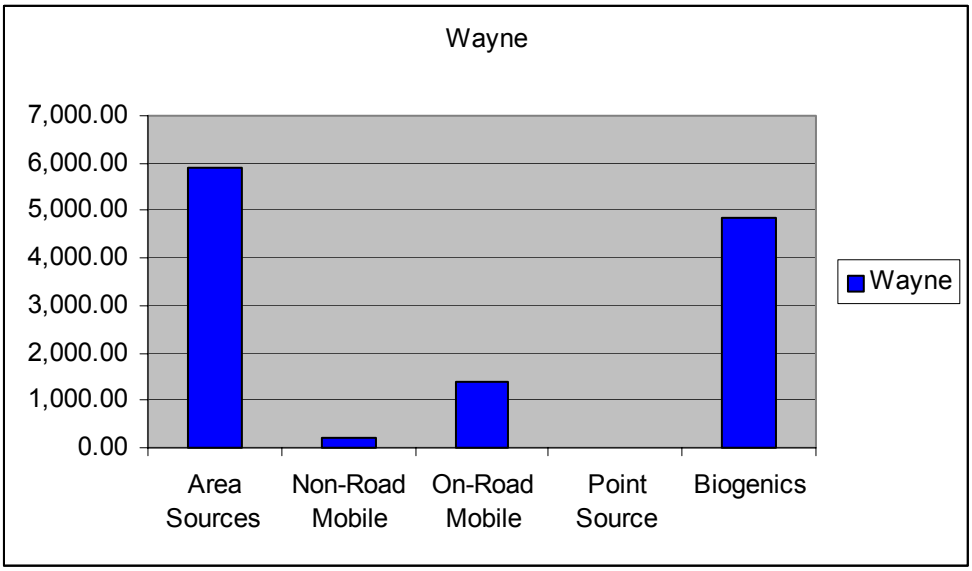
Source: Utah Division of Air Quality Annual Report (1996)

Figure 3.1-6. 1996 Summary of Emissions by Source—Sevier County



Source: Utah Division of Air Quality Annual Report (1996)

Figure 3.1-7. 1996 Summary of Emissions by Source—Wayne County



Source: Utah Division of Air Quality Annual Report (1996)

Prescribed Burning

The EPA notes in the Regional Haze Regulations (Federal Register/Vol. 64, No. 126) that fire emissions have a natural and a manmade component. The EPA also recognizes that all kinds of fire (wildfire, prescribed fire, etc.) contribute to regional haze, and a complex relationship exists between what is considered a natural source of fire versus a human-caused source of fire. For example, the increased use of prescribed fire in some ecosystems may lead to PM emissions levels lower than those that would be expected from catastrophic wildfire. Given that the purpose of prescribed fire in many instances is to

restore natural fire cycles to ecosystems, the EPA believes it would be appropriate to consider some portion of prescribed fire as "natural."

The EPA agrees that fire is an important emission source to include in air quality impact analysis, but current data do not show that fire is the predominant source of visibility impairment in any Class I area.

Visibility

Visual resources are one of the most socially and economically important resources in the RFO. In August 1977, the Congress amended the CAA to establish as a national goal "the prevention of any future and remedying of any existing impairment of visibility in mandatory Class I Federal areas, which impairment results from manmade air pollution" (Title I Part C Section 169A, U.S.C.[1990]). The 1977 Amendments also included provisions requiring applicants for new major source permits to assess the potential for their projects to cause adverse impacts on the air quality-related values, including visibility, in nearby Class I areas.

In July 1999, the EPA published the Regional Haze Rule. This regulation established a program for the improvement and protection of visibility in the 156 protected Class I parks and wilderness areas, including the establishment of baseline and current visibility conditions and the tracking of changes in visibility conditions over time.

Utah Air Conservation Rule R307-406 defines an adverse impact on visibility as "visibility impairment which interferes with the management, protection, preservation, or enjoyment of the visitors' visual experience of a mandatory Class I area." Any new major source or major modification must be reviewed for the impact of its emissions on visibility in any mandatory Class I area. The State of Utah is in the process of developing a Regional Haze State Implementation Plan (SIP) that will address visibility impacts to Class I airsheds. It is anticipated that the Regional Haze SIP will be released as a final rule on December 31, 2003.

The Colorado Plateau in the Four Corners States of the Southwest is one of the most intensively monitored areas in the NPS' IMPROVE Network. Based on data from the IMPROVE Network, the Colorado Plateau portions of the RFO are one of the regions with the lowest amounts of haze.

Data reported by the NPS IMPROVE Network indicated the following clear days (natural background) Standard Visual Ranges (km) for the following national parks in Utah.

Table 3.1-3. NPS IMPROVE Network Standard Visual Ranges

National Park	Spring	Summer	Autumn	Winter
Arches National Park[1]	182	152	177	150
Canyonlands National Park	160	149	161	167
Capitol Reef National Park[2]	160	149	161	167

1 - Monitoring at Arches National Park was discontinued in May 1992.
2 - Standard visual range has not been recorded at Capitol Reef National Park; however, past studies and analysis have estimated SVR values for Capitol Reef to be the same as Canyonlands National Park.

Near-field visibility could be impacted by suspended PM_{10} that would be generated by construction activities, vehicles traveling on access roads, off-highway vehicles (OHV), and wind-blown dust over exposed areas and smoke from fires and prescribed burns.

Of particular concern to the public are the dust impacts and reduced visibility resulting from increased use of OHVs on trail systems used by hikers, runners, and bicyclists. The public anticipates increasing demand for OHV use along with increases in recreation impacts from OHV activities.

Vehicle use on unpaved roads would result in localized increases in fugitive dust that would be temporary and would not exceed air quality standards. Although temporary, area emission of fugitive dust is not subject to State air quality permitting procedures and would not constitute any threat to human health and safety. However, such emissions are subject to control measures to prevent public nuisance under Utah Air Conservation Rule 307-205-3. Utah Air Conservation Rule 307-205-4 does not require dust control on unpaved roads when the average daily traffic level does not exceed 150 vehicles averaged over a five-day period.

Although fugitive dust would cause some localized visible dust clouds, the emissions are expected to have minimal effect on regional haze. PM smaller than 2.5 microns is the primary contributor to visual haze and adverse health effects. Less than 30 percent of the fugitive dust generated from unpaved roads is below 2.5 microns.

Air Quality Modeling Requirements

Criteria Pollutant Impacts Dispersion Modeling in Attainment Areas

New sources, or modifications to existing sources, whose total controlled emission increase levels are greater than those listed in the following Table, are required to submit a dispersion modeling analysis as part of a complete Notice of Intent (NOI).

Table 3.1-4. Modeling Requirements for Criteria Pollutants in Attainment Areas

Pollutant	Emissions (Tons/Year)
Sulfur Dioxide	40
Nitrogen Oxides	40
PM_{10} Fugitive Emissions and Fugitive Dust	5
PM_{10} Non-Fugitive Emissions or Non-Fugitive Dust	15
Carbon Monoxide	As required Under UACR307-405-6
Lead	0.6

Hazardous Air Pollutants Dispersion Modeling

Utah Air Conservation Rule R307-410-4 requires new sources, or modifications to existing sources, proposing increase of hazardous air pollutants (HAP) emissions to submit HAP emission levels and pollutant release information for their facility. The information submitted must include the emission threshold value (ETV). The ETV is the emission level above which a dispersion modeling analysis is required as part of a complete NOI.

Counties in the RFO are generating no HAPs.

Visibility (Plume Blight) Dispersion Modeling

New PSD or major modifications to PSD sources are required to conduct plume visibility modeling if they are deemed as having a significant impact in a Class I area. PSD sources that propose to permit any net emissions increase and are located within 10 km of a Class I area are also required to conduct plume visibility modeling.

Requirement for Regional Scale Modeling

The UDAQ was contacted concerning any need to conduct regional scale modeling to determine air quality impact resulting from BLM activities in the RFO. The UDAQ indicated that normal BLM actions would probably not require regional scale modeling since the effects would come from industrial

operations that would most likely be modeled by the company seeking to conduct the action. The UDAQ staff advised that regional scale modeling would not likely be a good approach to evaluating air quality impacts from activities in the area given the number of shortfalls associated with this type of modeling.

The Air Planning Section EPA Region 8 was also contacted concerning any need to conduct regional scale modeling to determine air quality impacts resulting from BLM activities in the RFO. The EPA was most concerned with potential impacts resulting from the Reasonably Foreseeable Development Scenario, in particular those impacts that could result from coal bed methane development, and suggested an air dispersion model be run for the combined Richfield/Price Field Office area.

Air Quality/Climate—Issues and Opportunities

Though not frequently mentioned in public scoping, the issue of visibility was mentioned. Visibility issues in Class I areas were not addressed in the Parker Mountain, Mountain Valley, or Forest MFPs, or the San Rafael and Cedar-Garfield-Beaver-Antimony RMPs, but they were addressed in the Henry Mountains MFP. Visibility issues should be addressed in the new RMP.

Analyses of previous planning efforts show that air quality issues were not addressed in the Parker Mountain MFP, Mountain Valley MFP, Forest MFP, or the San Rafael and Cedar-Garfield-Beaver-Antimony RMPs. The Henry Mountains MFP refers to Class I air sheds in National Parks and Class II air sheds in the Henry Mountains area. This planning effort should incorporate Utah Department of Environmental Quality (DEQ) regulations and State air quality standards.

The RMP may identify desired future conditions and area-wide criteria or restrictions, in cooperation with the State of Utah and EPA, that apply to direct or authorized emission-generating activities.

3.2 CULTURAL/PALEONTOLOGICAL RESOURCES

This section addresses a description of cultural and paleontological resources in the RFO, as well as a summary of how those resources are managed. The various definitions that apply to the cultural resources are contained in the BLM 8100 series manuals and will not be repeated here. As use of public lands continues to increase, pressures to manage the cultural and paleontological resources will increase. Expanding knowledge and flexible management is vital to continue to protect these resources.

Cultural/Paleontological Resources—Current Land Use Plan Direction

There are no management objectives specifically for paleontological resources in the existing LUPs. However, existing management prescriptions include paleontological resources under the recreation and mineral headings. Although these management prescriptions will not be addressed in this section, they will be addressed in the recreation and minerals sections.

Forest MFP, 1977 (Cultural Resources)

- Provide for extra protection and preservation of archeological sites in the Trough Hollow area.

Mountain Valley MFP, 1981 (Cultural Resources)

- By 1982, determine whether archeological site 42Pi269 contains significant scientific or cultural value to be nominated for inclusion on the National Historic Register.

Henry Mountains MFP, 1982 (Cultural Resources)

- Identify and nominate cultural resources that qualify for the National Register of Historic Places (NRHP).

Parker Mountain MFP, 1983 (Cultural Resources)

- By 1982, determine whether the four archeological sites listed below have significant cultural or scientific value to be nominated for inclusion on the National Historic Register: 42Wn1, 42Wn15, 42Wn616, 42Wn630.

Cedar-Beaver-Garfield-Antimony RMP, 1986 (Cultural Resources)

- Protect the cultural and historic values in the planning area from accidental or intentional destruction and give special protection to high value cultural and historic sites.

Forest MFP, 1977 (Paleontological Resources)

- There are no goals or objectives addressing paleontological resources in this plan.

Mountain Valley MFP, 1981 (Paleontological Resources)

- There are no goals or objectives addressing paleontological resources in this plan.

Henry Mountains MFP, 1982 (Paleontological Resources)

- There are no goals or objectives addressing paleontological resources in this plan.

Parker Mountain MFP, 1983 (Paleontological Resources)

- There are no goals or objectives addressing paleontological resources in this plan.

Cedar-Beaver-Garfield-Antimony RMP, 1986 (Paleontological Resources)

- There are no goals or objectives addressing paleontological resources in this plan.

BLM National Management (Paleontological Resources)

- Locate, evaluate, manage, and protect, where appropriate, paleontological resources.
- Facilitate the appropriate scientific, educational, and recreational uses of paleontological resources, such as research and interpretation.
- Ensure that proposed land uses, initiated or authorized by BLM, do not inadvertently damage or destroy important paleontological resources.
- Foster public awareness and appreciation of our nation's rich paleontological heritage.

Cultural/Paleontological Resources—Existing Management

Existing management of cultural and paleontological resources is concerned with the preservation of the non-renewable information the resources contain. This management direction is derived from existing legislation, such as the Antiquities Act of 1906, Historic Resources Preservation Act, and Archeological Resources Protection Act. Current resource management emphasizes identification and preservation of these resources.

The BLM USO issues both Paleontological and Cultural Resource Use permits in consultation with affected field offices. Permittees must meet certain qualifications and must agree to place their collections in approved repositories where they remain the property of the Federal government, and through it, the American people.

Cultural Resource Management

Current cultural resources management actions are limited to requiring cultural resources clearances and mitigation on projects involving surface-disturbing activities prior to such an activity. This management direction is in accordance with Federal law and BLM policy.

The Manual 8100 series provides guidance for management of cultural resources for BLM. Management objectives include the following:

- Identify, plan the appropriate use of, and manage cultural resources on public lands and in areas of BLM responsibility.
- Respond in a legally and professionally adequate manner to (1) the statutory authorities concerning historic preservation and cultural resource protection, and (2) the principles of multiple use and ecosystem management.
- Recognize the potential public and scientific uses of, and the values attributed to, cultural resources on the public lands, and manage the lands and cultural resources so that these uses and values are not diminished, but rather are maintained and enhanced.
- Contribute to land use planning and the multiple use management of the public lands in ways that make optimum use of the thousands of years of land use history inherent in cultural resource information, and that safeguard opportunities for attaining appropriate uses of cultural resources.
- Protect and preserve in place representative examples of the full array of cultural resources on public lands for the benefit of scientific and public use by present and future generations.

- Ensure that proper land uses, initiated or authorized by BLM, avoid inadvertent damage to Federal and non-Federal cultural resources.

Paleontological Resource Management

The Henry Mountains MFP has one management recommendation, contained in the recreation section, addressing paleontological resources. The MFP recommends the paleontological values at Jet Basin be preserved. The remote nature of this area, combined with overlapping special designations, has contributed to the preservation of these resources.

BLM manual section 8270, released in 1998, states BLM's current policy is to consider paleontological resource management a distinct BLM program, to be given full and equal consideration in all its land use planning and decision-making actions. BLM guidelines for paleontological resources emphasize three main uses: scientific research, education, and recreational collecting. To facilitate these objectives, the current planning process should:

- Identify areas and geological units containing fossil resources
- Evaluate the potential of areas to contain vertebrates of other significant fossils
- Develop specific recommendations to promote the above uses and mitigate resource conflicts
- Develop strategies to monitor lands where there are significant fossils.

Currently, several laws and regulations set the groundwork for paleontological resource management. BLM manages paleontological resources principally under the following authorities:

- FLPMA requires that the public lands be managed in a manner that protects the "…quality of scientific…" and other values.
- NEPA requires that "…important historic, cultural and natural aspects of our national heritage…" be protected, and that "…a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences…in planning and decision making…" be followed.
- 43 CFR 8365 addresses the collection of invertebrate fossils and, by administrative extension, fossil plants.
- 43 CFR 8364 addresses the use of closure or restriction of public lands to protect resources. Such closures or restrictions may be used to protect important fossil localities.
- 43 CFR 8365.1-5 addresses the willful disturbance, removal and destruction of scientific resources or natural objects and 8360.0-7 identifies the penalties for such violations.

Other direction for management of paleontological resources comes from 18 U.S.C. Section 641, 43 CFR, parts 3802 and 3809, 43 CFR 8200, 43 CFR 1610.7-2, Secretarial Order 3104, Onshore Oil and Gas Order No. 1 and 43 CFR Title 3162, Offer to Lease and Lease for Oil and Gas Form 3100-11, and the Federal Cave Resources Protection Act of 1988 and 43 CFR 37.

Cultural/Paleontological Resources—Resource Condition

An abundance of cultural and paleontological resources occurs in the RFO. Their distribution throughout the field office varies. The potential for use as scientific or recreational resources or the impact from surface disturbing activities varies as well.

Cultural Resources

Cultural resources are those fragile and nonrenewable remains of human activity, occupation, or endeavor identifiable through field inventories (surveys), historical documentation, or oral evidence. They include archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit.

The Archeological Resources Protection Act (16 U.S.C. Sec. 470hh) states that "information concerning the nature and location of any archeological resource for which the excavation or removal requires a permit or other permission under this chapter or under any other provision of Federal law may not be made available to the public… unless the Federal land manager concerned determines that such disclosure would further the purposes of this chapter or the [Reservoir Salvage Act of 1960] and not create a risk of harm to such resources or to the site at which such resources are located." In accord with this act, information in this section will not identify specific resource locations. To adequately address the existing condition of these resources, the types of resources present in the RFO and a limited description their nature will be included.

Cultural Resource Overview

Overviews of known cultural resources in the RFO show a wide range of and potential for cultural resources. These resources range in age from 12,000-year-old Paleo-Indian sites to the remains of historic mining or ranching operations.

Opportunities for archeological research in the RFO are believed to be nearly unlimited. Most of the currently available information about cultural resources in the RFO has come from mitigation of impacts from surface disturbance, although academic institutions have performed some excavations in the pursuit of research.

Cultural resources in the RFO can be classified according to one or more site-type categories. Sites fitting into more than one category generally are more complex and have more information potential than do single-category sites. At the broadest level, cultural resources are categorized as either prehistoric or historic. Following is an overview of the site types present in the RFO in both prehistoric and historic categories:

Prehistoric Site Types

Prehistoric sites can be associated with one or more of four broad thematic periods: Paleo-Indian, Archaic, Formative (Fremont or Anasazi), and Protohistoric. There are sites within the RFO from each period, with an especially large representation of Formative sites.

Prehistoric site types are descriptive. Information is not readily available during original recordation to determine functional types of most sites. Therefore, these site types are based upon physical characteristics that are generally recorded. Some of the site types in the RFO include the following:

- **Rock Art:** Rock art can be of two types: petroglyphs and pictographs. Petroglyphs are designs pecked or incised into the surface of the rock; pictographs are painted on the rock surface with various shades of pigment. At some sites, designs have been pecked into the surface and then painted. Rock art has not been attributed to specific human groups with any degree of assurance, but it is believed that rock art within the RFO represents groups living from before 9000 B.C. to the present.

- **Rockshelter:** A rockshelter consists of a rock outcrop or large boulder that provides shelter from wind, sun, rain, etc. Rockshelters were used prehistorically and historically.
- **Lithic Scatter:** A lithic scatter is any group of stone artifacts or artifact fragments. Lithic scatters are usually composed of flaked-stone tools or debitage. Ground-stone tools and tool fragments also fit into this category. This type ranges from sites with only a single tool present to sites with thousands of artifacts diverse in type and function.
- **Ceramic Scatter:** A ceramic scatter is any group of ceramic artifacts or artifact fragments and can result from either prehistoric or historic activity. Most prehistoric ceramics represent the Fremont Indian culture or tradeware from the Anasazi culture to the south, but a small amount of Numic (i.e., Ute or Paiute) pottery has been recorded.
- **Cairn:** A cairn is an intentionally created pile of stones. Most cairns in the RFO are from the historic period, i.e., sheepherders' monuments, mining claim markers, etc. However, some may be prehistoric.
- **Hearth:** A hearth is the remains of a feature where humans purposely used fire. This includes clay- or rock-lined fire pits, ash pits, ash stains, and fire-cracked rock concentrations or scatters.
- **Rock Alignment:** A rock alignment is any human arrangement of rock not recognized as part of a structure.
- **Cist:** Cists are small structures usually built for storage. They are slab lined or coursed masonry, generally about 1 meter in diameter. They are usually semisubterranean but can occur on the surface, freestanding or attached to a cliff face or ledge.
- **Burial:** Burial sites are those that contain human physical remains, below the surface or exposed, and whether marked or not.
- **Large Structures:** These structures are generally much larger than 1 meter in diameter and include a wide variety of construction types, material, and architectural features. The large structure site type will likely be subdivided during preparation of Cultural Resource Management Plans. The category now includes structures of brush and trees, mud and sticks, dry- and wet-coursed masonry, and slab-lined, boulder-lined, or unlined pits. These structures can be built in the open or in naturally protected areas.
- **Midden:** Middens are concentrations of all or several of the following: ash, charcoal, bone, sherds, lithic fragments, human excrement, and general garbage.

Historic Site Types

Historic sites are cultural resources with a period of significance between 1700 A.D. to the present. Historic resources generally fit better in thematic categories than in descriptive types. Because features such as ditches, fences, and houses cannot be understood or interpreted outside the functional complex of which they are a part, historic resources are grouped into several themes. Some of these themes are organized chronologically while most are functionally organized.

- **Pre-Settlement:** The pre-settlement category includes historic features from the period before the settlement of the five counties in the RFO. Limited features of this period have been identified. There are several records of individuals and groups passing through this area along what became known as the Old Spanish Trail. Remains of their activities may possibly be found. The Old Spanish Trail was designated a National Historic Trail in late 2002.

- **Ranching:** The ranching category includes features resulting from the raising of domestic livestock, such as fences, water developments, cabins, corrals, camps, and sheepherders' monuments. There is a long history of ranching in the RFO, and the historic resources remaining from these developments are useful historic resources.
- **Farming:** The farming category includes features resulting from the activities of raising crops, such as wells, barns, sheds, cisterns, farm implements, canals, ditches, and residences.
- **Mining:** The mining category includes features resulting from exploration for and extraction of mineral resources, such as shafts and adits, drill sites, prospect holes, tailing dumps and waste rock piles, ore bins, loading chutes, kilns, tramways, residences, and other buildings.
- **Transportation:** The transportation category includes features resulting from attempts to transport people or goods across the RFO, such as abandoned rail lines, railroad grades, construction camps, bridges, roads, trails, and possible remains of river navigation.
- **Government Management:** The governmental management category includes features resulting from government attempts to manage the land and its resources. Many of these features are the result of Civilian Conservation Corps (CCC) activities through the 1930s. They include dams, fences, land treatments or manipulations, spring developments, roads, and bridges.

National Register and Well Known Sites

Several prominent cultural resources are known to occur within the RFO. Some will be listed here so that those familiar with the area can understand the types of sites that are known to the BLM and that are being considered in this planning effort. The large number of known sites makes a complete list not plausible, nor would such a list add substantially to an understanding of the resources being considered here.

Three sites within the RFO are listed on the NRHP. Several other sites are eligible for listing. In 1987, the Henry Mountains MSA stated that there were 35 archeological and historic sites in the Henry Mountains area alone that met the eligibility criteria for listing in the NRHP. Current laws protect sites that are listed on the NRHP as well as those that are eligible for such a listing. The following three sites are currently listed on the NRHP:

- **Cowboy Caves:** This site consists of two adjacent caves: Cowboy Cave and Walters Cave. Together, they make up one of the richest archaic sites on the Colorado Plateau and outline almost 5,000 years of intermittent human habitation in the area.
- **Bull Creek Archeological District:** This area of roughly 1,900 acres contains more than 110 identified significant archeological sites, including habitations, storage structures, camps, and quarries. These sites represent a 400-year occupation (A.D. 800–A.D. 1200) of the area by peoples from the Formative period.
- **Starr Ranch:** This is a remnant of an 1890s stock-raising boom, when large cattle herds were introduced on the Henry Mountains. Starr Ranch is situated on the south slopes of Mt. Hillers, and its stone buildings are still standing.

More than 30 other archeological and historical sites in the RFO meet the eligibility criteria for listing in the NRHP.

Paleontological Resources

Paleontological resources are contained in most of the sedimentary rock units of the RFO. The large geographic extent of the RFO exposes more than 35 sedimentary geologic formations at the surface. A comprehensive paleontological resource inventory of these formations has not been completed for the RFO. Any management will have to be based on thorough inventory information that can be easily collected using expertise and experience of professional paleontologists in the State. Once baseline data on these resources are obtained, areas will be able to be classified as per BLM Handbook 8270.

Rock Formations

Following is a list of the surficial sedimentary rock formations in the RFO. This list provides a brief description of the important geologic formations on the east and south sides of the RFO. The sides of the RFO are differentiated by the different physiographic provinces; the east side of the RFO is contained, for the most part, in the Colorado Plateau province, and the west part is contained in the transitional province, as described above. Although this list does not provide a perfect stratigraphic column, it does address the surficial sedimentary rock units, from youngest to oldest as much as possible.

Surficial Deposits (Quaternary)—These deposits can be found in both the east and west portions of the RFO. They are unconsolidated surface deposits of varying textures and colors including alluvium, colluvium, pediment mantle, eolian dune, lacustrine, glacial drift; and deposits associated with landslides, slope-wash, alluvial fans, and terraces. No fossilized material exists in these deposits, though unfossilized evidence of Paleocene mega-fauna, such as mammoths, has been found in these deposits throughout central Utah. This formation is up to 250 feet thick.

Travertine (Quaternary)—Small travertine deposits are localized around hot springs in the Monroe-Joseph area, often associated with Tufa mounds. This formation also occurs interbedded with Tertiary bentonite deposits in the Redmond Hills, Sevier County. No known fossils exist in these deposits.

Sevier River Formation (Tertiary)—Found only in the west portion of the RFO, this formation is poorly to moderately consolidated, gray to pink conglomerate, sandstone and siltstone locally containing airfall tuff and basaltic lava flows. It was deposited in fluvial and locally lacustrine environments with some volcaniclastic debris. It is known to contain vertebrate fossils. Its exposed thickness is around 300 feet, but several more hundred feet may be unexposed.

Volcaniclastic Deposits (Tertiary)—Assorted volcaniclastic and pyroclastic deposits include those associated with the Mount Belknap Caldera and Little Table of the Marysvale Volcanic Field. Lithologies include breccias, conglomerates, sandstones and siltstones with minor amounts of tuff, ash and lava flows of varying compositions. Color varies from light gray, purplish gray, light green, reddish brown, and orange to white. These rocks were deposited by a variety of mechanisms including mudflows, landslides, lahars, and fluvial sedimentation. These deposits are only found in the west portion of the RFO.

Dipping Vat Formation (Tertiary)—This heterogeneous mixture of pyroclastic material includes sandstone, conglomerate, breccia, shale, marly limestone, bentonite, and volcanic ash. It is limited to the southern portions of the Pahvant Range in the western portion of the RFO. No fossils are known to have been discovered in the fluvial/volcaniclastic formation.

Bald Knoll Formation (Tertiary)—This formation is only found in the west part of the RFO. It is a lacustrine deposit of light gray to tan mudstone, claystone with interbedded siltstone, sandstone, and some limestone; and is up to 1,000 feet thick. It is mapped as Gray Gulch Fm. or the Formation of Aurora in places. The presence of fossil material is unknown for this formation.

Crazy Hollow Formation (Tertiary)—Found only in the western portion of the RFO, this fluvial deposit is a reddish brown to white sandstone, shaly siltstone with some conglomerate and limestone, as well as salt- and pepper-colored sandstone at base. Conglomerate facies contain distinctive chert pebbles. The presence of fossil material is unknown for this formation. It is up to 1,000 feet thick.

Claron Formation (Tertiary)—This fluvial and lacustrine deposit is only exposed in the western portion of the RFO. It is a red and white sandstone, shale, limestone, and conglomerate up to 300 feet thick. Trace invertebrate fossils are present in this formation.

Green River Formation (Tertiary)—This unit is laterally persistent and part of one of the largest lacustrine deposits in the world and it is present in both the east and west portions of the RFO. It is well known for the fish fossils discovered at Fossil Butte National Monument. In addition to vertebrate fossils, invertebrate and plant fossils are also known to occur. Lithologies include limestone, calcareous mudstone, siltstone, shale, and sandstone; while color varies from light gray, brown, and reddish brown to light green. The formation has been divided into at least five mapable members/facies, but nomenclature varies between different workers in different parts of the basin. It is gradational with the underlying Colton Formation and is up to 6,000 feet thick.

Colton Formation (Tertiary)—Exposed in both the east and west portions of the RFO, it is reddish brown to green mudstone and shaly siltstone interbedded with fine grain sandstone and minor limestone. It is primarily of alluvial origin with marginal lacustrine and deltaic facies and is known to contain invertebrate fossils. It is 325 to 800 feet thick.

Flagstaff Formation (Tertiary)—Exposed in both the western and eastern portions of the RFO, the Flagstaff is reddish brown to grayish brown mudstone with interbedded calcareous siltstone, sandstone, limestone conglomerate (locally oolitic), and limestone with minor carbonaceous shale and gypsum, between 200 to 1,100 feet thick. It is of lacustrine origin and contains invertebrate fossils.

North Horn Formation (Cretaceous/Tertiary)—A fluvial deposit with some lacustrine facies, the North Horn is a mudstone, claystone, sandstone, conglomerate and limestone with some coal along the east flank of the Gunnison Plateau varying from 500 to 3,000 feet thick. It is unstable and marked by many landslides and slumps. It is located in both the eastern and western portion of the RFO and is known to contain vertebrate and plant fossils.

Price River Formation (Upper Cretaceous)—Composed of sediment from rapid fluvial deposition with parent material eroded from Sevier thrust sheets, this formation is exposed on both sides of the RFO. Plant fossils are present. The Price River Formation is a light gray to grayish/reddish brown sandstone with conglomerate and mudstone. In places, it is dividable into distinct mapable members. It generally forms cliffs and steep slopes and is the uppermost unit of the Mesaverde Group in the eastern portion of the RFO. This formation varies from zero to 1,200 feet thick.

Castlegate Sand Stone (Upper Cretaceous)—Light gray to dark gray quartz sandstone with some conglomerate, it is fluvial in origin and commonly forms cliffs and steep slopes. Found in the eastern portion of the RFO, this 130- to 500-foot thick sandstone is the upper-middle unit of the Mesaverde Group.

Blackhawk Formation (Upper Cretaceous)—This formation, found in the western portion of the RFO, was deposited in a deltaic/interdeltaic environment and contains plant fossils and trace vertebrate fossils. It is a dominantly light brown to light gray quartz sandstone with interbedded shaly siltstone, shale, carbonaceous shale, and coal between 400 and 1,500 feet thick. It generally forms steep slopes. This is the most important coal-bearing formation in Utah, and host to the Book Cliffs and Wasatch Plateau coalfields. It is the lower-middle unit of the Mesaverde Group.

Indianola Group (Upper Cretaceous)—The Indianola Group is comprised of the Sixmile Canyon Formation, Funk Valley Formation, Allen Valley Shale, and Sanpete Formation. This group is only found in the western portion of the RFO in the Sanpete Valley. To the west of Sanpete Valley, this formation is a reddish brown to gray conglomerate. In this area, it is a fluvial, synorogenic (Sevier) deposit. To the east of Sanpete Valley, it is a light brown to yellowish brown sandstone, shale, and coal and some conglomerate. This portion of the formation is a Marine/paralic deposit. At up to 15,000 feet thick, this is the thickest Cretaceous deposit in Utah. The presence or potential for paleontological resources is not known for this group.

Iron Springs Formation (Cretaceous/Tertiary)—Contained in the western portion of the RFO and known to contain vertebrate fossils, this formation is a yellow to grayish-green sandstone and shale with some minor coal. This formation represents the transition to Tertiary lacustrine deposits.

Straight Cliffs Formation (Upper Cretaceous)—Underlying the Iron Springs Formation, the Straight Cliffs Formation is contained in the western portion of the RFO. It is a dark gray shale to brown sandstone with minor coal, carbonaceous shale, and siltstone. A coastal plain deposit interfingering with marine shale, this formation is known to contain vertebrate, invertebrate, and plant fossils.

Mancos Shale (Upper Cretaceous)—Consisting of six members, not all of which are present in the RFO, this formation is contained in the eastern portion of the RFO and is contemporary with the Iron Springs and Straight Cliffs formations of the western portion. Overall, the mancos shale is a light to dark gray, bluish gray to light brown shale and shaly siltstone with interbedded very fine to fine grain sandstone with thickness varying from 2,300 to 6,100 feet. Generally, the shale erodes to flat lowlands and valleys with sandstone members forming low ledges and cliffs. It was deposited on a shallow marine shelf transitional to delta plains. Invertebrate, vertebrate, trace vertebrate, and plant fossils are known to occur in this formation.

Dakota Sandstone (Upper Cretaceous)—Contained in both the east and west portions of the RFO, this formation is a tan to light brown, crossbedded, quartz sandstone with thin, discontinuous, carbonaceous seams. It was deposited in a beach to marginal marine/deltaic environment. Vertebrate, invertebrate, and plant fossils are present. It is zero to 150 feet thick.

Cedar Mountain Formation (Lower Cretaceous)—Consists of two massive-to-thick units: 1) an upper purple to gray mudstone with discontinuous sandstone lenses; and 2) a lower gray, crossbedded, quartz-rich, sandstone/conglomerate. This formation was formed in a fluvial depositional environment. Fossils present are from vertebrates, traces of vertebrate, and plants. Found only in the eastern portion of the RFO, this formation is between 160 to 330 feet thick.

Morrison Formation (Upper Jurassic)—Exposed in the east and west portions of the RFO, the Morrison consists of two members that were deposited in fluvial/terrestrial environments: 1) the Brushy Basin Member is a bluish gray, green and maroon/purple claystone and mudstone with some bentonite, sandstone and limestone beds; and 2) the Salt Wash Member is light gray to reddish purple quartz sandstone with some conglomerate and interbedded mudstone. It stands as low cliffs or rounded ledges. Vertebrate, invertebrate, trace vertebrate, and plant fossils are all present. With both members, the Morrison Formation is between 350 and 400 feet thick.

Summerville Formation (Middle Jurassic)—Shaly siltstone and sandstone with thin interbeds of gypsum, it stands as low cliffs. This formation is a tidal-flat deposit, with no known fossils present. It is exposed in both the east and west portions of the RFO, varying between 120 and 250 feet thick.

Curtis Formation (Middle Jurassic)—Only in the east portion of the RFO, this formation is a light greenish-gray to light brown quartz sandstone with some siltstone and conglomerate varying from 75 to

250 feet thick. It forms ledges that act as resistant caps. Invertebrate fossils are present in this marine deposit.

Twist Gulch Formation (Middle Jurassic)—This unit has been mapped in the Salina Canyon area (UGMS, 1986), and is equivalent to the Summerville Formation, Curtis Formation, and the Entrada Sandstone in the San Rafael Swell area. It consists of reddish-brown siltstone, mudstone, sandstone, and minor conglomerate up to 1,800 feet thick. It is a marginal fluvial, nearshore deposit, and the existence of fossils is unknown.

Entrada Sandstone (Middle Jurassic)—As the name indicates, this formation is sandstone, although there are a few thin interlayered lenses of shaly siltstones and mudstones. The entire formation is earthy and forms rounded ledges, steep slopes, and horizontally grooved low cliffs. It was formed in a nearshore eolian depositional environment and contains trace vertebrate fossils. It is found in both the east and west portions of the RFO and is between 200 to 300 feet thick.

Carmel Formation (Middle Jurassic)—This formation consists of two mapable units. The upper unit is a shaly siltstone with gypsum and sandstone interbeds that forms broad, intricately dissected slopes. The lower unit is a thin-bedded, dense limestone with places that pass laterally into a very fine-grained calcareous sandstone. Ripple marks, raindrop pits, and other evidence of shallow-water deposits mark this lower unit. The formation was deposited in a shallow marine to supratidal environment with associated invertebrate fossils. Total thickness is between 560 to 650 feet in the east and west portions of the RFO.

Arapien Shale (Middle Jurassic)—Diapiric intrusions of the Arapien Shale in the Sanpete/Sevier Valley were probably deposited in the Middle Jurassic and have been intermittently mobilized from Jurassic through Tertiary time. It consists of complexly deformed calcareous mudstone, siltstone, and sandstone with thick beds of halite, gypsum, and other evaporites. Deposited in a shallow marine environment, this formation contains trace vertebrate and trace invertebrate fossils. Its thickness is uncertain, perhaps around 13,000 feet.

Navajo Sandstone (Lower Jurassic to Upper Triassic)—This formation is a trough crossbedded quartz sandstone with a few limestone beds in the upper section. It stands as steep cliffs and rounded knolls. Deposited in an eolian environment, this formation contains trace vertebrate and plant fossils and is between 400 to 1,000 feet thick. Is can be found in both the east and west portions of the RFO.

Kayenta Formation (Upper Triassic)—A sandstone with some shaly siltstone and conglomerate, it forms benches and steep slopes and is well cemented with calcium carbonate. A fluvial deposit with plant and trace vertebrate fossils, it is 100 to 250 feet thick in both portions of the RFO.

Wingate Sandstone (Upper Triassic)—This formation is a crossbedded, quartz sandstone that stands as steep cliffs. It is well cemented with calcium carbonate and is strongly stained with manganese oxide (desert varnish). It's an eolian deposit with no known fossils. It is 350 to 450 feet thick and exposed in both portions of the RFO.

Chinle Formation (Upper Triassic)—Exposed in both portions of the RFO, the Chinle Formation is divisible into three members, in descending order: 1) the Church Rock Member is a sandstone and shaly siltstone; 2) the Moss Back Member (also called the Shinarump Conglomerate) is a conglomeratic sandstone with irregular bedding and abundant petrified and fossil wood in places; and the 3) Temple Mountain Member is a mottled sandstone. The entire formation was deposited in a fluvial environment. There is a potential for plant and trace vertebrate fossils in this bench-forming rock. The formation can be up to 400 feet thick.

Moenkopi Formation (Middle to Lower Triassic)—The upper part of this formation is a petroliferous, sandstone and shaly siltstone (slope former). The middle section is the Sinbad Limestone Member that is a crystalline, locally oolitic limestone with a few siltstone and sandstone interbeds (forms resistant caps and long dip slopes). The lower part is quartz sandstone with interbedded shaly siltstone and mudstone with some thin limestone at the base and occasional gypsum beds (forms gentle slopes). The Moenkopi has also been mapped as four different members: the upper Moody Canyon, Torrey, Sinbad Limestone, and lower Black Dragon. It was deposited in alternating continental and marine environments and contains trace vertebrate fossils. Found in both portions of the RFO, this formation is between 375 to 935 feet thick.

Kaibab Limestone and Toroweap Formation (Lower Permian)—The Kaibab formation is present in both the east and the west portions of the RFO while the underlying Toroweap Formation is closely associated with the Kaibab in the western portion. It is a light brown, locally sandy and petroliferous limestone that forms resistant dip slopes. It is a marine deposit with invertebrate fossils common, as well as chert geodes. This formation is 40 to 200 feet thick.

Cutler Group (Lower Permian)—This diverse group of rocks contains a variety of time-equivalent formations that go by different names across the region. Most of these rocks are not exposed as outcrop in the RFO, and the outcrops that do exist are in the eastern portion of the RFO. Overall, the rocks are mostly clastic deposits–with an eastern provenance in the Uncompahgre Highlands–that were deposited in a variety of sedimentary environments, including eolian, fluvial, and shallow marine. Formations include: 1) White Rim Sandstone; 2) De Chelly Sandstone; 3) Organ Rock Shale; 4) Cedar Mesa Sandstone; 5) Halgaito Formation; and 6) Elephant Canyon Formation. The Elephant Canyon formation is mostly a carbonate deposit, and has also been referred to as the Rico Formation. Both the White Rim and the Cedar Mesa Sandstone have been mapped as the Coconino Sandstone. In some places in southeast Utah, the clastic arkosic facies are identified as undifferentiated Cutler Group. Formations in this group contain vertebrate, invertebrate, plant, trace vertebrate, and trace plant fossils. The group is up to 2,200 feet thick.

Pakoon and Callville Formations (Undivided) (Lower Permian/Pennsylvanian)—Found only in the western portion of the RFO, these marine deposits are mapped together. A predominantly bluish gray, cherty, fossiliferous limestone and dolostone with some sandstone, it is up to 4,800 feet thick. It is unknown what fossils, if any, are present.

Hermosa Group (Pennsylvanian)—The Hermosa Group is divided into an upper Honaker Trail Formation and a lower Paradox Formation. It is only exposed in the eastern portion of the RFO. Overall, the Hermosa Group consists of reddish brown limestone, shale, and limy shale that contain thick sequences of evaporites in the Paradox Formation. This group is a shallow marine deposit with invertebrate fossils that is up to 2,400 feet thick.

Cultural/Paleontological Resources—Issues and Opportunities

The preservation and protection of nonrenewable cultural and paleontological resources is an important component of RMP development. There are numerous laws, regulations, manuals, and program guidance for these two programs that were not in existence when the previous plans were written. The new Richfield RMP should be developed to reflect current BLM cultural and paleontological program policy

Resource Management Issues (Cultural)

Some cultural resources in the RFO are well preserved, while others have been destroyed. The fragile nature of cultural resources makes them prone to damage, whether naturally or through human activity. Many sites have been damaged, intentionally or unintentionally, through human activity over the past 100

years. In the areas where human activities do not or have not occurred, or do so to a very minimum extent, there is usually little change in the condition of the resources. The impacts to cultural resources in these conditions are primarily attributed to exposure to natural processes.

The large amounts and varied types of cultural resources in the RFO were a concern identified in scoping. In general, scoping comments expressed the idea that cultural resources needed broader protections from the impacts being caused by other resource uses. Some of the resource issues identified as harmful to cultural and historic resources were recreation, minerals development, OHV usage, and impacts due to air pollution and grazing. Some of the comments on cultural resources called for better attention to regulations governing these sites and a need to establish agency and non-profit partnerships for resource protection. Additionally, scoping identified the following issues to be addressed in this planning process:

- The existing plans do not contain management that is current with the BLM cultural resource program policy.
- The need for extra protection and preservation for the Trough Hollow area must be reviewed.
- The need for extra management protection for the Bull Creek Archeological District must be reviewed.
- It must be determined whether Cowboy Cave needs special management.
- The new plan needs to reflect the procedures for consultation under Section 106 of the National Historic Preservation Act, as well as the consultation requirements as outlined in the American Indian Religious Freedom Act.

Piecemeal degradation of systematic resources is a concern to cultural resource management. Resources such as historic highways, fence lines, ditches, and other linear resources may be impacted in a piecemeal fashion through approved actions to portions of the systems. The loss of data resulting from individual actions is minimal, but cumulative actions result in the loss of information to the system as a whole.

Much of the cultural resource information in the RFO has come from mitigation efforts to surface-disturbing activities (salvage archaeology). The Interim Management Plan for lands under wilderness review reduces the potential for surface-disturbing activities within Wilderness Study Areas (WSA). As a result, there is an associated reduction in the potential for obtaining information on cultural resources in areas under wilderness review as a result of the reduced need for mitigation efforts and associated cultural resource reviews.

Access to cultural resources is a concern to cultural resource managers for two reasons: (1) access that is too open may lead to increased impact from vandalism, looting, or simply from natural elements degrading the condition of the resource; and (2) the loss of access creates difficulty in learning more about the resources that are being protected. Archaeological excavations, especially in the remote areas in the RFO, require significant support best provided by vehicular access. As such, access to cultural resources is a concern that could to be resolved in this planning effort.

Resource Management Issues (Paleontology)

Recreational fossil collecting and rock hounding is common in portions of the RFO. Collection of invertebrate and plant fossils is an appropriate use of public lands, so long as the collected fossils are not used commercially through sale, barter, or trade. Damage to paleontological resources can occur through theft and vandalism of significant fossil resources, as well as through inadvertent impacts from surface disturbance to sensitive areas or by well-meaning attempts by inexperienced individuals collecting fossils. Potential damage to or loss of significant fossils should be assessed and mitigated when surface-disturbing actions or land exchanges are proposed.

Opportunities exist in the form of students, volunteers, youth groups, and other interested publics who often work with permitted paleontologists to collect, document, curate, and display fossils from the public lands in the RFO. Opportunities for fossil tourism continue to draw people to southeastern Utah, though there are no interpreted fossil locations in the RFO. There are well known sites it the Henry Mountains for appropriate fossil collection. The public should be well informed of collecting rules, the meaning of fossils, and the need for resource stewardship.

As with cultural resources, too much access to paleontological resources creates manageability problems while too little access creates difficulty in continued research opportunities. The level of access to continue management of these resources is a concern in this planning effort.

Impacts to paleontological resource values were raised as a concern during scoping. In general, scoping comments expressed the idea that paleontological resources needed broader protections from the impacts being caused by other resource uses. Actions that result in surface disturbance, specifically in areas with a high potential for containing fossils, were noted in scoping. Specifically, this planning effort offers the opportunity for the new RMP to reflect policy changes in BLM's paleontology program.

3.3 FIRE AND FUELS MANAGEMENT

BLM manages wildfire where necessary to protect life, property, and high-risk resource values within the framework of applicable laws, regulations, and agency policies. Fires are managed in accordance with current fire management plans, which in turn draw direction from the existing LUPs. Fire management plans detail prescriptions for or limitations on fire suppression, including areas where fire will be completely suppressed or allowed to burn. Specific fire management goals and objectives can be found in the Richfield Fire District–Bureau of Land Management Fire Management Plan (1998).

Fire and Fuels Management—Current Land Use Plan Direction

Forest MFP, 1977

- There are no goals or objectives addressing fire or fire management in this plan.

Mountain Valley MFP, 1981

- There are no goals or objectives addressing fire or fire management in this plan. The 1979 Unit Resource Analysis (URA) states that in the Mountain Valley Planning Area, fire has been actively suppressed on wildlands for the past 90-plus years. The fuel buildup resulting from intensive suppression is not heavy, but changes in vegetation types are readily apparent. Suppression policies require immediate suppression of all fires occurring on public lands.

Henry Mountains MFP, 1982

- Modify the full suppression management program for the Henry Mountains Planning Area.
- **Rationale:** Present management requires full suppression of all fires. Fire management areas should be initiated to minimize fire suppression efforts on certain identified blocks of land that would have moderate to no impacts on the resources present. The establishment of fire management units would require less suppression expenditure and an identification of parameters within which fires would be allowed to burn themselves out or burn to suppression action.
- Expected results from a modified fire program would include—
  - The use of fire, either managed wildfire or prescribed fire, to create vegetation changes and reduce accumulated fuel loads.
  - Reduced cost of fire suppression in areas of low resource values.
  - Reduced cost of fire suppression in areas of poor or limited accessibility to ground tankers and hand crews.
  - Reduced suppression costs in areas that may be planned for prescribed burns. This would eliminate, in a large part, funds expended to suppress fires where funds are being programmed for prescribed burns in the same location.
- **Suppression:** The plan directs appropriate suppression action to be given to all fires occurring within the Henry Mountains Resource Management Area. Appropriate suppression action means using suppression action necessary to suppress fires threatening life, property and high value resources, while minimizing suppression costs where possible when fires are occurring in low value areas.
  - Fires burning within 1 mile of the following areas are given District suppression priority:
    1 Lonesome Beaver Campground
    2 Starr Spring Campground
    3 Crescent Creek Mines
    4 Eggnog Cabin Site

5 Hanksville
6 McMillan Springs Campground
7 Eagle City
8 Hancock Cabin—Dark Canyon
9 Ticaboo
10 Teasdale.

– Bureau Manual 9210 states BLM's general policy is suppression of wildfire in a manner that will minimize total resource loss, suppression costs, and environmental damage.

- **Prescribed Fire:** BLM's objective in the Henry Mountains Resource Management Area is to assure that a prescribed fire is an effective management tool to accomplish desired resource and fire objectives by manipulating vegetation.

Parker Mountain MFP, 1983

- There are no goals or objectives addressing fire or fire management in this plan.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- To reduce losses, complement resource management objectives and sustain productivity of biological systems through fire management.
- Implement full fire suppression on all public lands within the Cedar-Beaver-Garfield-Antimony Planning Units.
- The major management decisions for the fire management program are—
  – Full fire suppression will be carried out in all planning units.
  – Complete a Beaver River Fire Plan (including Pinyon, Cedar, and Beaver Planning Units) based on the existing plan for Pinyon Planning Unit.
  – Based on additional analysis, consider the establishment of modified and observation suppression areas based on review of escape fire analysis, post-burn reports, fuel models, vegetation aspects, and other resource values as appropriate for Cedar and Beaver Planning Units.

San Rafael RMP, 1991

- To suppress wildfires where necessary to protect life, property, and high-risk resource values
- To use prescribed fire to implement or maintain seedings where necessary.

Richfield Fire District—Bureau of Land Management Fire Management Plan, 1998

The BLM Fire Management Plan for the entire Richfield and Fillmore Field Offices was completed in 1998. It identifies management direction for prescribed and wildland fire. The fire and fuels management program is guided by national fire policies, which include public and firefighter safety, the role of fire in the ecological process, fire planning as an integral part of resource management, sound risk management, economic viability, and interagency cooperation. The following source documents provide direction for the fire program.

- The Henry Mountains MFP, 1981; San Rafael RMP, 1991; and Cedar-Beaver-Garfield-Antimony MFPs, 1986, allow for the use of wildland and prescribed fire to reduce the cost of fire suppression and alter vegetation.
- The Parker Mountain MFP and the Mountain Valley MFP are either silent about fire management or require full suppression.

- Smoke Management
  - Air quality will be maintained by complying with applicable Federal and State laws and regulations. These regulations currently consist of burning only when the clearing index is 500 or greater and smoke will not impact Class I Airsheds. Capitol Reef National Park is classified as a Class I Airshed.
  - Smoke is managed according to the Utah Smoke Management Plan, which meets the requirements of Title R307, Utah's air quality rules and the policies of the United States EPA's Interim Air Quality Policy on Wildland and Prescribed Fires.
  - Smoke impacts must be considered in the planning of all prescribed burns.
  - Residual smoke must be considered under the expected weather conditions. Additional direction contained in FSM 5142.3 and R-4 Supplement 5100-93-5 dated 12/27/93 must be considered in preparation of specific burn plans.

IM 2002-034 Fire Management Planning, 2001

IM 2002-034 provides additional information and guidance regarding the Federal Wildland Fire Management Policy and the treatment of wildland fire management in LUPs, fire management plans, and implementation-level plans and projects. Guiding principles related to fire management and fire management planning:

- The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
- Fire Management Plans, programs, and activities support RMPs and their implementation.
- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.

Policy statements related to fire management and fire management planning:

- Firefighter and public safety is the first priority. All fire management plans and activities must reflect this commitment.

- Fire as a critical natural process will be incorporated into LUPs and activities on a landscape scale and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of the fire. The circumstances under which a fire occurs and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected dictate the appropriate management response to the fire.

- Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. This will aid in achieving land health standards (see BLM Manual 4180, Rangeland Health Standards).

- Use of fire will be based on approved LUPs and Fire Management Plans and will follow specific prescriptions contained in operational plans. Factors to be considered in determining the use of fire will include such things as public and firefighter safety and the ability to use fire without jeopardizing key ecosystem components, species viability, water quality, and cultural and historic resources.

- Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health and safety, and to help communities protect infrastructure.

- Every area with burnable vegetation must have an approved Fire Management Plan. Fire Management Plans are strategic plans that define a program to manage wildland and prescribed fires based on the area's approved LUP.

- Fire Management Plans must provide for firefighter and public safety; include fire management strategies, tactics, and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations.
- Fire Management Plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors. Information needed to support fire management will be developed through an integrated interagency fire science program. Scientific results must be made available to managers in a timely manner and must be used in the development of land management plans, Fire Management Plans, and implementation plans.
- Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners.

Fire and Fuels Management—Existing Management and Resource Condition

The condition of fire and fuels is integrated into the fire management zones (FMZ) and management direction polygons sub-heading below. The description of each category identifies the condition of the resource, followed immediately by the management of the fuel type described.

The Richfield Fire District fire management program, which is responsible for management of fire and fuels in the RFO, is guided by national fire policies that include public and firefighter safety, the role of fire in the ecological process, fire planning as an integral part of resource management, sound risk management, economic viability, and interagency cooperation.

Fire management information was obtained in a review of the Richfield Fire District–Bureau of Land Management Fire Management Plan 1998. The Richfield Fire District of BLM is located in south-central Utah. The District includes Juab, Sanpete, Millard, Sevier, Piute, Wayne, and part of Garfield counties and is divided into on-the-ground management areas shown as follows:

- Fillmore Field Office
- RFO.

The District has a diverse fire program with a wide variety of fuel types and topography. The fuel types range from grass-covered cold desert valleys through sagebrush, pinyon, and juniper to the tall conifers in the tops of the Henry and Deep Creek mountains.

The Richfield Fire District Fire Management Plan takes direction from the land use decisions determined in the following MFPs and RMPs:

- House Range RMP—1986
- Warm Springs RMP—1986
- Mountain Valley MFP—1981
- Parker Mountain MFP—1983
- Henry Mountains MFP—1982
- Forest MFP—1977.

Fire History

From 1987 through 1996, the Richfield Fire District has averaged 61 fires per year (see Table 3.3-3 below). These fires have burned an average of 33,019 acres per year. The majority of fires occur in

FMZs 1 and 2, with less than 10 percent of the fires occurring in FMZ 3. Lightning caused 84 percent of the fires, while humans caused 16 percent. The District's heaviest fire year on record was 1996, when 116 fires burned a total of 262,923 acres.

The fire District has had a moderate prescribed fire program, with most of the burning for rangeland maintenance and improvement. The average acres burned in the prescribed fire program each year have been less than 1,000 acres.

Fire Protection Responsibilities

The Richfield Fire District is responsible for fire management for BLM land in Juab, Sanpete, Millard, Sevier, Piute, Wayne, and part of Garfield counties. The District is part of the Richfield Interagency Fire Organization and has working agreements with the Fishlake National Forest, Manti-LaSal National Forest, the State of Utah, the USFWS, and Capitol Reef National Park. The District works with these partners and neighbors through a closest forces initial attack agreement.

Fire Management Zones and Management Direction Polygons

Two separate sets of polygons were developed; Management Direction Polygons were developed to integrate the District's resource objects into the fire management direction. FMZs were developed to determine the organization needed to meet the fire management direction.

To identify the fire management direction, the District was also divided into various-sized polygons based on common resource objectives. These Management Direction Polygons do not necessarily coincide with the FMZs. An interdisciplinary team, using the guidance in the RMPs, developed prescriptive guidance for each Management Direction Polygon that includes the desired resource condition, fire management direction, suppression constraints, appropriate rehabilitation methods, and planned hazardous fuels treatments. Management Direction Polygons were developed across the fire District using Geographic Information System (GIS) Gap Analysis Program (GAP) vegetation data developed by Utah State University. This GAP data was consolidated into broad areas with common resource objectives. Each Management Direction Polygon was assigned to one of four Fire Management Categories (Map 24):

- **Category A—**Wildland fire is not desired.
- **Category B—**Wildfire likely to cause negative effects, but these effects may be mitigated.
- **Category C—**Fire is desired, but there are constraints.
- **Category D—**Fire is desired, and there are no constraints or areas where fire will not normally burn.

To identify the fire workload and determine the organization needed to meet fire management direction, the District is divided into various-sized polygons based on predicted fire behavior. FMZs, a fire management division of areas with like fuel and fire history, and Representative Locations (RL), areas within the FMZs that represent a typical fire response, were established.

The FMZs were developed across the District using GIS GAP vegetation data. This GAP data was consolidated into broad fuel model types that became the basis of the FMZ delineation. The GAP produced 38 classes of vegetation. These vegetation classes within the District boundary were grouped together and assigned one of the thirteen Fire Behavior Prediction System fuel models. These groupings were loaded into the GIS and overlaid with the historical fire occurrence. By looking at the patterns of fire occurrence in relationship to the preliminary fuel groupings, the FMZs were further refined.

RLs were then delineated in GIS for each FMZ. The RLs were based on fire occurrence, response times, walk-in locations, and attack philosophy and/or adjusted to coincide with FMZs or fuel changes.

The District is divided into three FMZs. FMZ 1 is sagebrush using NFDRS Fuel Model T. FMZ 2 is pinyon/juniper using NFDRS Fuel Model F. FMZ 3 is grass using NFDRS Fuel Model A.

Table 3.3-1. Management Direction Polygons

Polygon Name	Category	FMZ	RL	Acres
AR1 Painted Rocks	A	1	3	1,168
AR2 Otter Creek Reservoir	A	2	4	323
BR1 Crucial Deer and Elk Winter Range	B	2	4	311,604
BR2 Deer/Elk Winter Range	B	2	4	25,352
CR1 Pinyon/Juniper Encroachment	C	1	4	141,412
AH1 Henry Mountains Campgrounds	A	2	5	500
AH2 Fremont River Corridor and Its Tributaries	A	3	4	2,500
AH3 From Notom South to Bullfrog Area	A	3	4	525,604
BH1 Around the Base of the Henry Mountains	B	2	5	90,148
BH2 High Elevation Mountain Tops	B	2	5	20,777
BH3 East Half of the Resource Area	B	3	4	675,981
BH4 PJ Belt Around the Henry Mountains	B	2	5	3,316
CH1 Zone Encircling the Henry Mountains	C	2	5	141,977

Notes: **Category A** – Wildland fire is not desired.
Category B – Wildfire likely to cause negative effects, but these effects may be mitigated.
Category C – Fire is desired, but there are constraints.
Category D – Fire is desired, and there are no constraints or areas where fire will not normally burn.
FMZ 1 – Sagebrush, Fuel Model T
FMZ 2 – Pinyon/Juniper, Fuel Model F
FMZ 3 – Grass, Fuel Model A
Acres: Acreage includes private and State land blocks and was rounded for simplicity.

Source: Richfield Fire District–Bureau of Land Management Fire Management Plan 1998

The polygon names in Table 3.3-1 correspond to the descriptions in the following pages. The first letter represents the Fire Management Category designation, as explained above. The second letter represents the polygon location. The letter "H" represents a polygon in the Henry Mountains area; the letter "R" represents a polygon in the Richfield area. The final number is simply for counting purposes.

Category A

AR1 encompasses the area within the Painted Rocks Recreation Area. The vegetation is dominated by pinyon, juniper, basin big sagebrush, and cheatgrass. The topography is rolling foothill country and alluvial flats. The Desired Resource Condition is a mixture of perennial grasses, forbs, trees, and shrubs.

Using full suppression tactics, fires will be suppressed at 25 acres or less than 90 percent of the time in Fire Intensity Levels (FIL) 1–4 to protect human life, recreational values, and capital investments. The use of tracked equipment, in the construction of fire lines, would require a resource advisor to be present. The resource advisor would flag acceptable routes that would be the least disruptive to existing resources. The use of dozers on fragile south slopes and on slopes in excess of 60 degrees is not acceptable. The use of burnout is acceptable if it helps to achieve resource objectives.

Both aerial seeding/single chaining and drill seeding could be used for rehabilitation depending on topography, accessibility, soils, and type of vegetation burned. There are no planned hazardous fuel treatments in this polygon. However, fuel hazard reduction may be necessary to protect the recreational values of the area. If fuel hazard reduction becomes necessary, treatments such as prescribed fire, disking/drill seeding, and chaining/broadcast seeding could be used. A maximum of 200 acres per year and 600 acres per decade (long-term) could be mechanically treated. If prescribed fire is used, a maximum of 50 acres per year could be treated to create fuel breaks. The long-term (10-year) maximum treatment would be 300 acres.

AH1 includes the Lonesome Beaver, Dandelion Flat, McMillan Springs, and Starr Springs campgrounds; private lands with cabins on Burnt Ridge, Bromide Basin, and the Cat Ranch; State lands with cabins at Willow Springs (UDWR), Mud Spring (near Crescent Creek), and Gold Hill Development; communications sites on South Creek Ridge, Copper Ridge, South Summit Ridge, and Bulldog Ridge; Hancock Cabin (BLM); Plateau Uranium Mill near Ticaboo; and leased State land at Ticaboo and the boat storage facilities to the south. Elevation ranges from 4,000 to 10,500 feet, and the topography varies from gently rolling to steep. Vegetation varies from warm desert shrub at the lowest elevations with sites scattered through the pinyon/juniper, scrub oak/sagebrush, ponderosa pine/mountain brush, and spruce/fir/aspen types at the highest elevations. The Desired Resource Condition is for proper functioning combination of plants, animals, and watershed conditions necessary to protect and improve these fragile areas.

Full suppression tactics should be used to protect human life and capital investments. Fires should be controlled within 50 acres 90 percent of the time in FILs 1–4. Methods and tools used for suppression within WSAs will be consistent with Interim Management Policy and Guidelines (BLM Manual H-8550-1). The resource advisor must authorize use of dozers. Any equipment used in areas where knapweed or other noxious weeds occur should be washed to minimize the spread of noxious weeds.

In WSAs, reseeding of native species for rehabilitation may be conducted consistent with Interim Management Policy and Guidelines.

There are no planned hazardous fuel treatments in this polygon, but fuel hazard reduction may be conducted around some of these areas to protect life or capital investments. Prescribed fires would be the preferred method where WSAs are involved.

AH2 encompasses the Fremont River corridor and its tributaries (Pleasant Creek and Sandy Creek), which is primarily private land and riparian vegetation. The riparian vegetation consists of tamarisk, Fremont cottonwood, coyote willow, phragmites, sedges, rushes, grasses, cattails, and clover.

The Desired Resource Condition calls for the reduction of tamarisk along this corridor and would be desirable to allow native species to return to riparian areas and achieve Proper Functioning Condition, which is achieved through plant diversity, age/class diversity, and resilience to erosion.

Full suppression would be implemented as the risk of wildland fire adjacent to these areas exceeds benefits attainable through the use of fire. Fires should be controlled within 50 acres 90 percent of the time in FILs 1–4. Fire in riparian areas would be suppressed to maintain water quality, reduce erosion, and maintain important wildlife habitat. Wildland fire may be allowed to burn if reduction of undesirable vegetation (tamarisk, Russian olive) can be achieved. Fire suppression tactics should be used that do not cause undue surface disturbance in areas of poor vehicle access, wet or boggy soils, or thick vegetation.

Rehabilitation of areas could include chemical treatments to prevent resprouting of undesirable species, hand planting of desirable species (cottonwood, willow), and seeding desirable grass/grass-like species.

Prescribed fire may be used to remove undesirable vegetation, rehabilitate areas in poor condition, and increase diversity and age/class structure of desirable vegetation. Prescribed fire should be used to break up fuel continuity in potential high-risk fire areas to protect those areas from greater resource losses. A maximum of 50 acres would be burned annually.

AH3 encompasses Hartnet, Cathedral Valley, and the lowlands and benches from Notom south to the Bullfrog area. The main vegetation type is a warm desert shrub/salt desert shrub type. This is a low precipitation area, and plant spacing can be wide. Many parts of this area have been invaded by or are dominated by cheatgrass.

The Desired Resource Condition calls for proper functioning combination of plants, animals, and watershed conditions necessary to protect and improve these fragile areas.

Full suppression tactics would be implemented. Fire will be kept at 50 acres or less 90 percent of the time in FILs 1–4. Wildfire in these areas is not desirable as a result of low probable success of rehabilitation efforts. Methods and tools used for suppression within WSAs will be consistent with Interim Management Policy and Guidelines (BLM Manual H-8550-1). The resource advisor must authorize use of dozers. Any equipment used in areas where knapweed or other noxious weeds occur should be washed to minimize the spread of noxious weeds. Several species of listed and proposed Threatened and Endangered species occur in this polygon, and the District Botanist should be contacted for locations.

The main concern for rehabilitation areas would be for erosion. Vegetation rehabilitation success would be minimal.

Cheatgrass-dominated areas with some desirable cool season grass species would benefit from early spring prescribed fires. Up to 75,000 acres over the next 10 years could be converted.

Category B

BR1 encompasses crucial deer and elk winter range, including most of the old Sevier River Resource Area (SRRA), from Valley and San Pitch mountains on the north, south to Piute and Otter Creek reservoir and east to the Awapa Plateau. The vegetation is dominated by Wyoming/Basin big sagebrush, black sagebrush, low rabbitbrush, rubber rabbitbrush, spiny hopsage, black greasewood, shadscale, cheatgrass, blue grama, sand dropseed, curlygrass, and limited cool-season grasses such as squirreltail, sandberg bluegrass, needle-and-thread, and Indian ricegrass. The topography includes benches, alluvial flats, and rolling foothills. This polygon is noncontiguous, made up of many smaller isolated tracts varying in size from a few hundred acres to tracts of several thousand acres.

The Desired Resource Condition calls for productive and multiple-aged stands of sagebrush, spiny hopsage, and fourwing saltbrush that are available to deer and elk November 15 through March 15. These species are key forage plants used by deer and elk during the winter. They are killed by fire. The key is to have a diverse mosaic of productive browse, cool season grasses/forbs, and pinyon/juniper thermal cover stands.

Wildland fire is restricted to a maximum size of 25 acres per tract 90 percent of the time in FILs 1–4. When 25 acres have burned in any one tract, full suppression will take place to protect the remaining vegetation. Several species of special status plants occur in this polygon. The use of tracked equipment, in the construction of fire lines, would require a resource advisor to be present. The resource advisor would flag acceptable routes that would be the least disruptive to existing resources. The use of burnout is acceptable as long as it helps achieve resource objectives.

Drill seeding and/or broadcast seeding/single chaining could be used for rehabilitation depending on topography, accessibility, soils, and type of vegetation.

Fuel hazard reduction may be necessary to protect the resource values of the area. A maximum of 6,000 acres will be treated in any 10-year period. Because mechanical treatments allow better survival of important browse species, mechanical treatments such as disking/drill seeding and Dixie harrowing/broadcast seeding should be used if possible. A maximum of 25 percent of a given tract could be mechanically treated in the short term (1 year) and a maximum of 50 percent of a given tract could be mechanically treated in the long term (10 years). If prescribed fire is used, then a maximum of 10 percent of a given tract could be treated in the short term (1 year). A maximum of 30 percent could be treated in the long term (10 years).

BR2 encompasses crucial deer summer range/elk winter range in an isolated area of public land on the east side of Sevier County near Fremont Junction. Vasey big sagebrush, Gambel's oak, mountain snowberry, antelope bitterbrush, birchleaf mountain mahogany, curlleaf mountain mahogany, chokecherry, serviceberry, bluebunch wheatgrass, Kentucky bluegrass, muttongrass, lettermans stipa, and big bluegrass dominate the vegetation. The topography is mountainous with numerous drainages, benches, ridges, and alluvial fans. This polygon is non-contiguous, made up of many smaller isolated tracts varying in size from a few hundred acres to tracts of several thousand acres.

The Desired Resource Condition calls for productive, multiple-aged stands of bitterbrush and mountain mahogany to be available to deer and elk May 15 through November 15. These species are key browse plants used by both deer and elk. They do not sprout well after fire. The restoration of bitterbrush and mahogany is very expensive and often not successful. Conserving and enhancing these mountain browse types is the goal.

Wildland fire is restricted to a maximum size of 100 acres per tract 90 percent of the time in FILs 1–4. When 100 acres has burned in any one tract, full suppression will take place to protect the remaining vegetation. The use of tracked equipment, in the construction of fire lines, would require a resource advisor to be present. The resource advisor would flag acceptable routes that would be the least disruptive to existing resources. The use of burnout is acceptable as long as it helps achieve resource objectives.

Broadcast seeding/Dixie harrowing or aerial seeding/single chaining for rehabilitation could be used depending on topography, accessibility, soils, etc.

Fuel hazard reduction may be necessary to protect the resource values of the area. A maximum of 2,500 acres will be treated in any 10-year period. Because mechanical treatments allow better survival of important browse species, when fuel hazard reduction becomes necessary, then mechanical treatments such as disking/drill seeding and Dixie harrowing/broadcast seeding should be used if possible. A maximum of 10 percent of a given tract could be mechanically treated in the short term (1 year) and a maximum of 30 percent of a given tract could be mechanically treated in the long term (10 years). If prescribed fire is used, then a maximum of 25 percent of a given tract could be treated in the short term (1 year). A maximum of 50 percent could be treated in the long term (10 years).

BH1 encompasses small tracts of important big game winter range scattered around the base of the Henry Mountains. These areas are primarily mixed pinyon/juniper/sagebrush areas. Depending on fire severity ratings, these areas can burn fast because of the plant density.

The Desired Resource Condition calls for a good mosaic and variety of age classes of desirable browse species. Browse species should be managed at a level that provides optimum nutrition, availability, and succulence.

Individual unplanned ignitions are restricted to a maximum size of 50 acres 90 percent of the time in FILs 1–4. If wildfires occur when half or more of the area is under treatment, they will be suppressed immediately. Methods and tools used for suppression within WSAs will be consistent with Interim Management Policy and Guidelines (BLM Manual H-8550-1). The resource advisor must authorize use of dozers. Before arrival in this area, any equipment that was previously used in areas where knapweed or other noxious weeds occur should be washed to minimize the spread of noxious weeds. Several species of listed and proposed Threatened and Endangered species occur in this polygon, and the district botanist should be contacted for locations.

Rehabilitation is essential to prevent cheatgrass invasion and restore winter range browse conditions. Methods will depend on the topography of the burned area. A rangeland drill, Dixie harrow, and/or aerial seeding will be considered.

Prescribed fire and/or mechanical methods of fuel reductions may be proposed to help achieve resource objectives and/or to protect the sites. In this polygon, no more than 200 acres per year will be treated. No more than 2,000 acres would be treated through any combination of wildfire or prescribed fire over a 10-year period.

BH2 encompasses the high elevation mountaintops of the Henry Mountains. Access is poor. This area is rugged. Mountain brush, ponderosa pine, spruce-fir, and sub-alpine areas with important and crucial big game summer habitat dominate the area.

The Desired Resource Condition calls for a good mosaic and variety of age classes of desirable browse species. Browse species should be managed at a level that provides optimum nutrition, availability, and succulence.

Unplanned ignitions are restricted to a maximum of 500 acres per fire 90 percent of the time in FILs 1–4. At times when fire danger ratings are very high to extreme and fire prescription parameters indicate little chance of managing a fire to stay within these limits, full suppression actions will be taken. Methods and tools used for suppression within WSAs will be consistent with Interim Management Policy and Guidelines (BLM Manual H-8550-1). The resource advisor must authorize use of dozers.

Aerial application of seed mixtures is preferred for rehabilitation.

Prescribed fire is desirable, consistent with land use and prescribed fire plan objectives. Potential for fuel reductions and vegetation management is high. Five hundred acres could be treated with fire and/or other methods in this polygon annually. No more than 4,000 acres will be burned through a combination of wildfire and prescribed fire in a 10-year period.

BH3 covers the east half of the Henry Mountains resource area. The area is vast and remote. Long steep canyons break flat desert lands. Access is poor. Warm desert shrub grasslands contain areas of pinyon and juniper and salt desert shrub types. This area also contains some riparian areas surrounded by slickrock canyons.

The Desired Resource Condition calls for a good mosaic and variety of age classes of desirable browse species. Browse species should be managed at a level that provides optimum nutrition, availability, and succulence.

Unplanned ignitions will be restricted to a maximum size of 150 acres 90 percent of the time in FILs 1–4. Once that level is attained, all fires will be suppressed until the criteria can be reevaluated. Unplanned fire may be mitigated but is most often detrimental. At times, when fire danger levels are in the very high to extreme categories and fire prescription parameters indicate little chance of managing the fire to stay within these limits, full suppression actions will be taken. Methods and tools used for suppression within WSAs will be consistent with Interim Management Policy and Guidelines (BLM Manual H-8550-1). The resource advisor must authorize use of dozers. This area also contains desert bighorn sheep habitat, and the canyons provide yearlong habitat for the listed Threatened Mexican spotted owl. Fires in spotted owl habitat should be managed according to the Mexican spotted owl recovery plan and "Suggestions for the Management of Mexican Spotted Owls."

Rehabilitation is essential to restoring resource values. Methods will be determined depending on the site.

Prescribed fire and/or mechanical methods of fuel hazard reduction may be necessary to protect the resource values or attain desired conditions. In any year, no more than 3,000 acres would be treated through wildfire, prescribed fire, and/or mechanical methods to attain objectives within the defined polygon. Over a 10-year cycle, no more than 30,000 acres or half of the acreage within the defined polygon would be treated.

BH4 encompasses the old seedings in the pinyon/juniper belt around the Henry Mountains. The areas are approximately mid-slope on the mountain, extending up to 8,500 feet in elevation. Topography is rough and often inaccessible to vehicles. Piles of slash still persist. Pinyon/juniper have reestablished and stand approximately 6 feet tall. The under story is primarily low brush and grasses.

The Desired Resource Condition calls for a good mosaic and variety of age classes of desirable browse and grass species. Browse species should be managed at a level that provides optimum nutrition, availability, and succulence.

Unplanned fires will be restricted to a maximum of 100 acres, 90 percent of the time in FILs 1–4 unless a resource advisor determines a beneficial opportunity exists to meet resource objectives. Methods and tools used for suppression within WSAs will be consistent with Interim Management Policy and Guidelines (BLM Manual H-8550-1). The resource advisor must authorize use of dozers. Wash any equipment prior to arrival in this area that was previously used in areas where knapweed or other noxious weeds occur to minimize the spread of noxious weeds. Several species of listed and proposed Threatened and Endangered species occur in this polygon, and the district botanist should be contacted for locations.

The areas within the seedings need to be recycled over time. The treatment areas would coincide with the perimeter of the seedings. In any year, no more than 250 acres would be treated through wildfire, and/or prescribed fire to attain objectives within the defined polygon. Over a 10-year cycle, no more than 2,500 acres would be treated.

Category C

CR1 encompasses the Sevier River portion of the District, where the vegetation is dominated by Utah juniper, pinyon pine, big sagebrush, and scattered cool season grasses such as Indian ricegrass, squirreltail, sandberg bluegrass, needle-and-thread, and cheatgrass. The topography includes flats, benches, drainages, canyons, foothills, and mountain plateaus.

The Desired Resource Condition calls for stabilizing the encroachment of pinyon/juniper into other desirable vegetation types. Convert the monocultures of pinyon/juniper into diverse, mosaic patterns that include perennial grass/forb/browse areas as well as untreated mature stands of pinyon/juniper trees. The goal is to create diverse habitat areas.

Wildland fire is restricted to a maximum size of 1,000 acres per event 90 percent of the time in FILs 1–4. When 1,000 acres have burned, then full suppression will take place. Fire is desired to improve wildlife habitat, vegetation composition/cover, forage, and other values. Several species of special status plants occur in this polygon. The use of tracked equipment, in the construction of fire lines, would require a resource advisor to be present. The resource advisor would flag acceptable routes that would be the least disruptive to existing resources. The use of burnout is acceptable as long as it helps achieve resource objectives.

Aerial seeding/broadcast seeding followed by single chaining would be used in rehabilitation efforts.

Fuel hazard reduction may be necessary for the long-term management of the community and to prevent catastrophic fires. The preferred method would be to double chain and aerial seed with prescribed fire

being the next choice. A maximum of 3,000 acres in the short term (1 year) and 15,000 acres in the long term (10 years) could be treated.

CH1 constitutes a wide zone encircling the Henry Mountains. Topography is rough, with steep canyons and a wide range of elevation. Access is generally very poor. The area is characterized by extensive pinyon/juniper encroachment. Understory vegetation is scattered browse and grasses. Most browse is older and contains more dead than live material.

The Desired Resource Condition calls for a good mosaic and variety of age classes of desirable browse species. Browse species should be managed at a level that provides optimum nutrition, availability, and succulence.

Unplanned fire is restricted to a maximum of 1,000 acres per event. No more than 5,000 acres would be burned in any single year. No more than 50,000 acres would be burned in a 10-year cycle. Much of this area occurs within WSAs, and unplanned fires are acceptable. The methods and tools used to suppress or manage fires must be consistent with Interim Management Policy and Guidelines, BLM Manual H 8550-1.

Prescribed fire is essential to prevent undesirable vegetation and enhance forage conditions for wildlife and livestock. Prescribed fire is essential to the long-term management of this vegetation community. In any year, no more than 5,000 acres would be treated through wildfire, prescribed fire, and/or mechanical methods to attain objectives within the defined polygon. Over a 10-year cycle, no more than 50,000 acres would be treated.

Fire Prevention Program

Prevention Analysis—The prevention analysis was done in partnership with the Richfield Fire District-BLM, Fishlake National Forest and the State of Utah.

- **Values—**An interdisciplinary team of specialists, during the phase one process, identified several priority values at risk from unplanned wildfire. These values include the following recreation areas: Painted Rocks, Otter Creek Reservoir, Lonesome Beaver, Dandelion Flat, McMillan Springs, and Starr Springs; intermingled private lands and communication sites: Willow Springs, Burnt Ridge, Bromide basin, Cat Ranch, South Creek Ridge, Summit Ridge, Bulldog Ridge, Hancock Cabin and mines at Ticaboo; and areas with unique natural resources: the Fremont River Corridor.
- **Risks—**The potential for wildfire ignitions from natural causes is high, whereas the potential for human-caused ignitions has been historically low. Lightning-producing storms develop in the afternoons and usually follow a western or southwestern flow across the District. The storms often split around Monroe Mountain, producing lightning in the Parker Mountain Area. The only areas with a high human-caused risk are the BLM land surrounding the populated valleys (Sevier, Round, and Scipio) and the area where BLM land is adjacent to or intermingled with private lands. The risks in these areas include power lines, railroads, power equipment, maintenance and construction projects, dispersed recreation, and debris burning. The remainder of the District has low to moderate human-caused risk, with the most probable risks beings power lines, maintenance or construction projects, agricultural/ranching activities, dispersed recreation, campfires, and debris burning.
- **Hazards—**The "hazards" on the Richfield Fire District can best be characterized by the relationship between the topography and fuel types. This hazard analysis identified areas of like

fire behavior: fire intensity, rate of spread, and resistance to control. Table 3.3-2 shows the hazard rating for the major fuel types and slope classes.

Table 3.3-2. Hazard Rating

Hazard Criteria	Low	Medium	High
Fuel Type	Desert Shrub	Scattered PJ	Grass/Sage or Dense PJ
Slope	0-15%	16-30%	31%>

- **Historical Fire Occurrence—**Table 3.3-3 shows the average historical fire occurrence for the years 1987–1996.

Table 3.3-3. Fire Occurrence, 1987–1996

Cause of Fire	Number per Year
Lightning	50.9
Equipment	1.2
Smoking	0.4
Campfire	0.9
Debris Burning	1.9
Railroad	0.6
Arson	2.5
Children	0.4
Misc.	2.1
Total	60.9

- **Priority Areas—**Those areas where the combination of values, risks, and hazards are such that unplanned ignitions are of concern and where the application of mitigation and education would most likely be a benefit.
- **Plan—**The mitigation actions that most effectively reduce the District's suppression costs and the damage or loss of values are patrolling, signing, law enforcement, hazard reduction, public contacts, inspections, and education.
- **Strategies—**The interagency prevention workload analysis outputs show the hours needed to accomplish the actions of the prevention plan. The outputs costs are shared between the Fishlake National Forest and the State of Utah (see Table 3.3-4).

Table 3.3-4. Workload Analysis Outputs

Actions	Hours
Patrol	256
Signs	66
Law Enforcement	40
Hazards	330
Public Contact	610
Inspections	80
General	867
Total	2249

Fire Use and Fuels Program

The Richfield Fire District has been committed to utilizing prescribed fire in resource management activities for many years, primarily for fuel hazard reduction, range improvement, and wildlife habitat enhancement. The annual program for the District has been less than 1,000 acres. The District, as well as the entire Bureau, has come to realize that fire can and must play a larger role. Research has shown that

many rangeland ecosystems are in poor health (outside of the properly functioning condition) because of the exclusion of fire. This has caused many areas to be at risk. The District fire use program is designed not only to reduce fuel hazards, improve rangeland production, and enhance wildlife habitat, but also to reintroduce fire into fire-dependent ecosystems and let fire play its more natural role. By accomplishing this, the District will be able to use fire for resource objectives as well as reduce the magnitude and severity of wildfires.

As a result of the National Fire Plan of 2001, there has been an increase in hazardous fuel reduction efforts within the RFO. The majority of fuels reduced have been within pinion-juniper stands. Projects completed in 2002 include the reduction of 2,000 acres near Mayfield, 850 acres near Marysvale, 60 acres near Greenwich, and 1,000 acres in the Henry Mountains. Reduction and thinning of pinion-juniper has been completed by hand with the use of chain saws. Projects planned in the near future include the reduction of pinion-juniper affecting 500 acres near Antimony, 1,300 acres near Monroe, 400 acres near Glenwood, 600 acres near Salina, and 1,000 acres in the Henry Mountains. The general purpose of hazardous fuel reduction in forested areas is to reduce the amount and severity of wildland fire, especially in locations where urban areas interface with forest lands.

Phase One Fire Use and Fuels Goals and Objectives

Phase one of the Fire District's fire planning effort identified goals and objectives for prescribed fire by category and management area.

- **Category A—**These are areas in which wildland fire is unwanted. Category A is made up of management areas that include recreation areas, intermingled private lands with improvements, unique resource values such as National Landmarks, etc., communication sites, and salt desert shrub lowlands. Although wildland fire is generally unwanted, the interdisciplinary team did identify areas where the use of fire or mechanical treatments could protect improvements, private lands, and unique resource values, as well as reduce the invasion of cheatgrass. The following table illustrates the maximum allowable annual program.

Table 3.3-5. Category A Maximum Allowable Annual Treatments

	Rx Fire Ac.	Mech. Ac.	Fuel Break Ac.
Protection of Improvements			300
Protection of Private Lands			50
Protection of Unique Resources	500		
Reduce Cheatgrass	7,500	200	
Total	8,000	200	350

Historically, the District has annually burned by wildfire 4,786 acres in the Category A areas. Only a small portion of the historical acres burned would help to meet the objectives. The management direction for most of the Category A polygons requires full suppression tactics, further reducing the number of acres that could be accomplished through resource benefiting fires. Given these facts, it is estimated that the maximum annual workload for Category A would be as follows:

Table 3.3-6. Category A Maximum Annual Workload

	Acres	Number of Projects
Rx Fire	5,000	10
Mechanical	200	2
Fuel Breaks	350	2

- **Category B—**These are areas in which unplanned wildland fires are likely to cause negative effects, but these effects can be mitigated through the use of fire or fuels treatments. Category B is made up of management areas that include critical big game winter range, crucial big game summer range, high elevation mountain tops, large expanses of desert and slick rock canyons, older PJ chainings, and large burned areas that have significant investments in rehabilitation. Although unplanned wildland fire is generally unwanted, the interdisciplinary team did identify areas where the use of fire or fuels treatment could help meet the desired resource objectives. The following table shows the maximum allowable annual program.

Table 3.3-7. Category B Maximum Allowable Annual Treatments

	Rx Fire Ac.	Mech. Ac.	Fuel Break Ac
Protect or Enhance Winter Range	700	1,100	
Protect or Enhance Summer Range		250	
Improve Resource Values	750		
Protect Resource Values	5,000	8,000	
Total	6,450	9,350	

Historically, the District has annually burned by wildfire 26,361 acres in the Category B areas. On average, 19,459 acres have burned in the BF2 polygon, which are the areas around Black Rock and Lt. Sahara. Nearly 270,000 acres burned in BF2 in 1996. It is anticipated that none of the 2,000 acres of allowable burning in these areas, and only 1,000 acres of mechanical treatments, will be accomplished in any year. Whether the number of fires remains the same or declines, it can be expected that some of the wildland fire will be resource-benefiting fire. It is anticipated that resource-benefiting fires will account for approximately 4,000 acres. Given these facts, it is estimated that the annual workload for Category B would be as follows:

Table 3.3-8. Category B Maximum Annual Workload

	Acres	Number of Projects
Rx Fire	2,450	8
Mechanical	2,350	12
Fuel Breaks		

- **Category C—**These are areas where wildland fires are desired to manage ecosystems given certain constraints. Category C is made up of management areas that include areas of extensive pinyon/juniper encroachment where fire is desired to improve wildlife habitat, reduce hazardous fuels, and improve watershed and forage production. The following table shows the maximum allowable annual program.

Table 3.3-9. Category C Maximum Allowable Annual Treatments

	Rx Fire Ac.	Mech Ac.	Fuel Break Ac.
Reduce Fuels			
Improve Resources	10,000	10,000[1]	
Total	10,000	10,000	
Notes: 1 – Phase one identified 10,000 acres to be treated with prescribed fire or mechanically or a combination of the two.			

Historically, the District has annually burned 771 acres in the Category C areas. It can be expected that some of the wildland fires will be resource-benefiting fires. It is anticipated that resource-benefiting fires will account for approximately 500 acres. The burn windows for prescribed fire in pinyon/juniper can and often is very narrow, which would limit the number of

acres that could be accomplished annually. The number of acres to treat is reduced to 4,000 based on the narrow windows and complexity of burning in pinyon/juniper Given these facts, it is estimated that the annual workload for Category C would be as follows:

Table 3.3-10. Category C Maximum Annual Workload

	Acres	Number of Projects
Rx Fire	2,500	7
Mechanical	1,500	5
Fuel Breaks		

Specific treatment objectives for each fire management polygon in the RFO is outlined in the Richfield Fire District–Bureau of Land Management Fire Management Plan 1998, Appendix A: Phase One Narrative and Polygons.

Constraints

Fire suppression constraints and restrictions affect the type of suppression action taken and may become a significant factor in achieving fire protection standards. Specific constraints are listed in each of the polygons narratives found in the Richfield Fire District–BLM Fire Management Plan. The following is a list of general constraints District-wide (1998).

- The use of tracked equipment, in the construction of fire lines, would require a resource advisor to be present. The resource advisor would flag acceptable routes that would be the least disruptive to existing resources. The use of burnout is acceptable as long as it helps achieve resource objectives.
- Methods and tools used for suppression within WSAs will be consistent with Interim Management Policy and Guidelines (BLM Manual H-8550-1). The resource advisor must authorize use of dozers. Equipment used in areas where knapweed or other noxious weeds occur will be washed to minimize the spread of weeds.
- Use fire suppression tactics that do not cause undue surface disturbance in areas of poor vehicle access, wet or boggy soils, or thick vegetation.

Present Demand for Fire Management Resources and Capability to Meet Demand

The present demand for fire management resources is as outlined in the Richfield Fire District–Bureau of Land Management Fire Management Plan. Future fire management resource demand cannot be predicted. It is based on variables such as weather conditions, vegetation type, and human use of an area. However, the expectation is that requirements for personnel and fire fighting/fuels management resources will significantly increase from current demand. Current planning direction calls for more prescribed burn and fuels management, especially as it relates to wildland-urban interface areas.

Fire and Fuels Management—Issues and Opportunities

The current RMPs/MFPs do not reflect recommendations and updated terminology described in the Federal Wildland Fire Management Policy Review of December 1995. This planning effort should address appropriate fire management actions including where fire is not desired and where fire can be used as a resource management tool for ecosystem restoration and maintenance. Wildland fire risk associated with the urban interface is a major concern nationally, as well as for the RFO. At issue are the types and quantities of fuels and the proximity of those fuels to homes or other high-value areas.

Many of the ecosystems in the Field Offices are fire dependent. The exclusion of wildland fires over the past 100 years has eliminated the function of fire as part of the ecosystem, often resulting in a decline of ecosystem health and an increase in the potential for uncharacteristic, high-intensity wildfires. This is of particular concern around the wildland/urban interface. The risks associated with fire in the areas of accumulated fuels should be assessed, and opportunities to treat the problem areas should be identified. Those areas or those situations where the reintroduction of fire would be beneficial to ecosystem health could be identified, and a strategy to treat those areas could be developed.

The National Fire Plan/IM (2004–007) states the BLM should have a consistent approach to incorporating the National Fire Plan and the Federal Wildland Fire Management Policy in LUPs. The current RMP effort provides an opportunity for BLM to accomplish this.

3.4 FISH AND WILDLIFE

BLM manages fish and wildlife habitat in coordination with State and Federal wildlife management agencies. This section addresses the management and condition of fish and wildlife habitat management in the RFO.

Fish and Wildlife—Current Land Use Plan Direction

Forest MFP, 1977

- Improve the quality of the mule deer and elk winter range and provide for increases in deer and elk numbers by increasing the number of animal unit months (AUM) reserved for big game. Maintain these increased numbers at maximum levels that will preclude damaging their habitat.
- Rehabilitate approximately 3,500 acres of pinyon/juniper area to improve big game and other wildlife habitat.
- Keep in public ownership the public lands within critical habitat areas and acquire by trade or purchase certain (to be identified) State and private lands within critical wildlife habitat areas, and provide reasonable public access to tracts of public land by 1983.
- Improve the quality and quantity of fish and waterfowl habitat of Ivie Creek, Quitchupah Creek, Yogo and Springs Creeks, Last Chance Creek, and the numerous small reservoirs throughout the unit.
- Improve the vegetation cover in this unit, particularly along drainage bottoms, to enhance the food and cover for small mammals, reptiles, amphibians, and birds to provide water that is as clean and clear as possible.
- Improve and expand the general habitat for raptor species (eagles, hawks, and owls), including the rare prairie falcon, other raptors, and the endangered peregrine falcon.
- Improve the quality and expand the quantity of upland game habitat throughout the planning unit and to provide for an increase in population of pheasants, chukars, mourning doves, and cottontail rabbits.

Mountain Valley MFP, 1981

- Provide three transplant sites for the Utah prairie dogs in the North Sevier and Piute planning units for use by 1986 to establish separate colonies of 30 to 100 breeding animals (spring count) per colony.
- Provide forage and water for the existing population of 122 antelope on public land within the planning area and for an increase to 265 animals by 1986.
- Maintain the quality of 77,478 acres of critical mule deer winter range in current or better condition.
- Provide forage and water on public lands sufficient for the present mule deer population of 15,917 and for an expanded population of 30,132 mule deer by 1986.
- Improve the condition of 8,360 acres of big game winter range in the Gunnison Valley, Gypsum, and North Narrows and South Narrows allotments by 1990.
- Maintain at least the present level of quality on 6,330 acres of big game winter range in the planning area.
- Provide forage and water for the existing elk population of more than 525 elk and an increase to more than 700 elk by 1986.
- Improve 40,000 acres of sage grouse habitat in the North Sevier Planning Unit by 1986.
- Improve two miles of waterfowl nesting habitat on Otter Creek Reservoir by 1988.
- Improve 3.75 miles of former riparian habitat on Peterson Creek in the North Sevier Planning Unit by 1986.

- Improve 2.25 miles of stream and riparian habitat on Lost Creek in the North Sevier Planning Unit.

Henry Mountains MFP, 1982

- Reestablish indigenous wildlife to the Henry Mountains.
- Enhance, improve, maintain, and protect riparian areas on the Henry Mountains Planning Area.
- Ensure that the Henry Mountains bison herd remains wild and free roaming and that it not be restricted or turned into a semidomesticated herd that is moved from pasture to pasture as are some of the herds found in the United States.
- Modify all water facilities (both existing and proposed) under Bureau control to make water available to all species of wildlife on a yearlong basis.
- Maintain and improve rangeland conditions and implement big game use levels that do not exceed the carrying capacity of the range.

Parker Mountain MFP, 1983

- By 1981, expand the Utah prairie dog habitat by 1,850 acres to accelerate population growth.
- Improve the percentage composition of cool season grasses from an average 7 percent to 20 percent on 5,490 acres of prairie dog habitat.
- Correct an existing hazard to eagles while improving raptor habitat by removing the Windy Peak to Dry Valley and Fishlake Spur power lines.
- Enhance hunting opportunities within the planning unitby 1985 for birds of prey.
- Maintain the Big Hollow area as a raptor study area until additional inventories have been completed.
- Expand small raptor habitat in the open expanses of the southwest corner of the planning unit.
- Expand antelope summer range by 47,000 acres by 1985.
- Provide forage and water for the existing 600 head antelope herd and for a 400 head increase by 1985.
- Provide forage and water and reduce winter range competition for the present 1,100 head of deer and for 4,069 head by 1985.
- Provide forage and water for the existing 99 head of elk and for an additional 209 head by 1985.
- Monitor the trends and utilization on all big game ranges in the unit after 1980.
- Expand fishery habitat on public land by 7 miles with a concurrent expansion of up to 25 miles on State and private land by 1990.
- Improve the aquatic habitat in the upper 3 miles of stream Section 2 of the Fremont River by 1980.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Manage wildlife habitat to favor a diversity of game and nongame species.
- Provide forage for current big game numbers and prior stable or long-term numbers in the future should populations increase and habitat improvement occur.
- Improve habitat in poor condition on crucial deer winter range to reduce depredation on private lands.
- Protect against the loss of crucial big game habitat from encroachment by incompatible uses.
- Improve riparian/fisheries habitat in area currently in poor condition because of livestock grazing practices.
- Avoid deterioration of riparian/fisheries habitat currently in fair or good condition.

Fish and Wildlife—Existing Management

In managing fish and wildlife habitat, BLM will make decisions that will not jeopardize the continued existence of plant or animal species that are listed, officially proposed for listing, or are candidates for listing as Threatened and/or Endangered species. BLM accomplishes this management through coordination with the USFWS and the UDWR. BLM will initiate Section 7 consultation with USFWS before approving or implementing any action that may affect listed species or designated critical habitat. Habitat for candidate species will be managed to protect them from actions that would contribute to their being listed through Endangered Species Act (ESA). Habitat for other special status species will be managed as necessary to protect them and their habitat from loss in accordance with guidance provided through FLPMA, BLM, and Federal Government directives.

BLM coordinates activities in the RFO with the UDWR in managing habitat for fish, wildlife, upland game birds, and waterfowl to achieve and maintain sustainable populations, including population dynamics and population distributions. The UDWR is responsible for managing the populations while BLM is responsible for managing the habitats that the species use. BLM works cooperatively with UDWR to maintain and reestablish populations of native species, through habitat management and restoration, that have used the historic range located within the Richfield RMP boundaries. Hunting is allowed throughout the RFO in accordance with State of Utah regulations.

Fish and wildlife habitat is generally managed according to the guiding principles outlined by the *BLM Wildlife 2000, the Riparian-Wetlands Initiative for the 1990s, a Strategy for Future Waterfowl Habitat Management on Public Lands, Watchable Wildlife, Recreational Fisheries Program*. BLM implements this general guidance through specific management actions associated with species in the project area

Some challenges facing the management of the fish and wildlife species and their habitats within the RFO include the following:

- Range management
- Mineral exploration and development
- Recreational use
- Native and nonnative species interactions
- Water/drought conditions
- Predator control.

Range Management

Grazing management has the potential to impact habitat conditions of key wildlife areas, such as aspen and mahogany stands, riparian areas, wetlands, and meadows. Exclosures are used in meadows and riparian areas to protect these sensitive areas. Scheduled livestock use may be restricted in certain areas in an effort to rehabilitate riparian and migration corridors. BLM uses information generated from monitoring studies to assess the effectiveness of such grazing management actions.

Mineral Exploration and Development

Exploration for and development of mineral resources, including locatable, leaseable, and saleable, within the RFO pose concerns related to habitats and species interactions. Concerns include the direct loss of habitat due to site disturbance, fragmentation of habitats related to road construction, disruption of migration activities, incursion of nonnative plant species that outcompete native forage, noise, provision of hunting roosts for raptors, and impacts both in quantity and quality to watering holes and aquatic habitats.

BLM attempts to limit the impacts of resource development through provisions in use authorizations and direct management actions. Management actions include spatial and seasonal adjustments for access to sensitive areas, adjusting motorized vehicular access, permit requirements (such as water quality impact limits), nonnative and exotic plant control, or direction for the size and timing of drilling activities.

Recreational Use

Over the last 10 years there has been a significant increase in the use of OHVs for recreation, including access to hunting, fishing, and camping areas. In addition, these vehicles have been used to access archeological and cultural areas of interest. Impacts related to OHVs include erosion of soils and landscapes, degradation of watershed integrity, and noise disturbance to nesting and breeding wildlife. BLM works to manage the impacts of OHVs on wildlife habitat by limiting access to certain areas and by utilizing seasonal use restrictions.

Native and Nonnative Species Interactions

Presence of nonnative fish and wildlife species may result in increased competition with native species for food, water, cover, and habitat. Increased competition during severe winters for food and cover could result in death and decrease populations of native species. Additionally, native species are often at greater risk to diseases and parasites introduced by nonnative species. These diseases and parasites can decrease the viability of native species populations.

In some cases, alteration to streambed structure and function from agriculture, mining, and minerals exploration and recreational interests has played a role in the alteration and reduction of fluvial habitat. Some nonnative species can adapt more easily to changes or other disturbances in the ecosystem and may outcompete native species.

Water/Drought Conditions

The desert ecosystems of the RFO make water a scarce commodity for fish and wildlife in the RFO. Drought conditions exasperate this condition. Drought conditions can adversely affect wildlife habitat and the species that depend on it. Because of drought, less forage, water, and cover will be available. This can reduce reproduction rates or lower the offspring viability. Long-term drought can change plant species composition, reducing the amount and quality of available habitat. Reductions in habitat area can increase predation rates and/or disease and parasite occurrence. These factors can increase stress in wildlife populations, leading to a decrease in wildlife populations.

Predator Control

Predator control is authorized through the APHIS Plan, in coordination with the USFWS and UDWR. Protocols were formalized in an interagency MOU between the Department of the Interior-BLM and the Department of Agriculture in 1995 (60F26045-48, 5/16/95). An annual operating plan is submitted by APHIS for BLM review and concurrence.

Mitigating Impacts to Wildlife Habitat

BLM is responsible for the management of wildlife habitats. In considering development activities, as listed above, BLM considers impacts on wildlife habitat. Such considerations in existing management include the following:

- Sage grouse strutting grounds
- Sage grouse forage areas
- Raptor nest areas

- Bison habitat including wintering forage ranges and calving areas
- Mule deer fawning areas
- Mule deer and elk wintering forage ranges
- Amphibian wetlands
- Riparian areas along streams for forage and bird nesting
- Streams and springs that supply water for listed and other native species.

Guidelines and stipulations in use authorizations are used by BLM to manage and mitigate impacts to wildlife habitat. These guidelines and stipulations can include the following:

- Seasonal restrictions to strutting grounds and riparian areas
- Avoidance of permanent occupancy within ½ mile of active raptor nests
- Vehicle restriction to designated roads
- Offsite mitigation to replace lost habitats
- Restricted structures at sites to limit hunting roosts for raptors
- Fencing of springs and wetland areas
- Limiting grazing in crucial habitat areas
- Seasonal restrictions within a ½ mile of Mexican spotted owl Protected Areas of Concentration (PAC) sites.

Special Status Species

The USFWS Threatened and Endangered species and designated critical habitat are managed to support recovery. Candidate species are managed to maintain viable populations, thereby preventing Federal listing from occurring. Inventories have been initiated for USFWS listed and Candidate plant and wildlife species, and their distribution is generally well known. Specific management direction to influence habitat components, leading to a species recovery, is integrated into ongoing BLM plan activities.

Federally protected species can have critical habitat identified as crucial to species viability. For those species that are listed and have not had critical habitat designations identified for them, BLM cooperates with the USFWS to determine and manage habitats of importance.

BLM and the USFWS have entered into a consultation agreement to provide guidance on the development of the RMP revisions. Other BLM special status species are being addressed independently.

Fish and Wildlife—Resource Condition

The RFO, from the Sanpete and Sevier Valleys in the north and west to the deserts south of the San Rafael Swell, including the Henry Mountains to the south, encompasses diverse and important habitats for use by big game species, upland bird species, native fish, native plants, and amphibians. Habitats of importance include riparian habitats along the Sevier, San Pitch, Dirty Devil, and Fremont River drainages including the many tributaries, cliff and talus habitats along the major and side canyons, pinyon/juniper mesa tops, blackbrush bench areas, and shadscale bench and shallow basin areas, and the mixed desert to alpine environs of the Henry Mountains.

Riparian areas occur primarily in association with the Sevier, San Pitch, Dirty Devil, and Fremont Drainages. These riparian habitats provide important areas for wildlife use and avifauna nesting. Often the riparian vegetation provides a corridor for animal migration and travel. Usually a high degree of plant diversity occurs along the riparian corridors, exhibiting variable density and composition of plants that lead to diversity of openness and ground cover. In a later stage of development, riparian communities can support cottonwood-willow communities. The invasion of tamarisk into riparian areas is affecting the health of riparian systems, shifting the system to a vegetation monoculture.

Healthy riparian communities provide stability to the streams. Riparian vegetation communities assist in moderating stream temperatures and energy, providing important organic input to the streams, and stabilizing stream banks. Healthy riparian communities also serve to slow overland flow, capture sediments, and provide a filter that enhances water quality.

The upper reaches of RFO river drainages support cool water fisheries and a warm water species assemblage in their lower reaches. Management of fisheries is related to thermal and sediment conditions, in-stream habitat and species interactions. Reaches with limited or constrained riparian areas typically exhibit warmer water temperatures and less stream stability.

The diversity of habitats and landscapes within the RFO cumulatively provides important areas for meeting life requirements, including breeding and spawning, foraging, migration, and winter range.

The habitat and wildlife within the RFO are representative of northern Great Basin and Colorado Plateau flora and fauna. The RFO has an unusual mosaic of diverse habitat types supporting the assemblages of species that live within the RFO. Diverse habitats within the RFO provide habitat for mule deer, elk, bison, desert bighorn sheep, and pronghorn, as shown on Maps 28, 29, and 30. Aspen and mountain mahogany provide nesting habitat for a variety of bird species, including neotropical migrants. Large and small rim rock complexes in canyons and along ridge lines provide cliff and rock slope habitats that are primary nesting sites for swallows, swifts, golden eagles, Mexican spotted owls, falcons, turkey vultures, and numerous other species of hawks. Rocks and canyons also provide cover for denning sites for mountain lions and bobcats, and yearlong habitats for small mammals including ground squirrels, wood rats, and rabbits. Abandoned mine shafts and adits in the RFO, along with natural caves, provide potential and occupied habitat for numerous species of bats. Seeps and springs provide water and meadow habitats of vegetation during important birthing and parturition periods for fish and wildlife. Riparian habitats are used extensively by wildlife, including neotropical migratory birds, such as hummingbirds, finches, warblers, flycatchers, thrushes, and orioles. Small, shallow lakes and wetlands provide seasonal habitat for resident and migrant waterfowl and shorebirds, including American avocet, killdeer, black-necked stilt, long-billed curlew, Canada geese, mallard, gadwall, cinnamon teal, northern shoveler, redhead, canvasback, and tundra swan. The fisheries resources in the RFO are separated into cool water species that inhabit the high elevation streams and the warm water species that live in the larger rivers and flat-water habitats. Native and nonnative fish inhabit the RFO.

Special Status Species

Formal consultation is required on any action that a Federal agency proposes that (1) may adversely affect a listed species and (2) will result in jeopardy or adverse modification of critical habitat. Even if the action may be beneficial to a species or its habitat, consultation is required. Table 3.4-1 identifies the federally listed wildlife species in the RFO. Table 3.4-2 lists those wildlife species identified by BLM as sensitive, Endangered, or Threatened.

Table 3.4-1. Federally Listed Wildlife Species Within the RFO

Common Name	Scientific Name
Mammals	
Utah prairie dog	*Cynomys parvidens*
Birds	
Bald eagle	*Haliaeetus leucocephalus*
Southwest willow flycatcher	*Empidonax trailii extimus*
Mexican spotted owl	*Strix occidentalis lucida*

Table 3.4-2. Sensitive Wildlife Species in the RFO

Common Name	Scientific Name	BLM Status	Utah Division of Wildlife Resources Status
Amphibians			
Boreal toad	*Bufo boreas boreas*	Sensitive	Sensitive, declining population, distribution, and/or habitat—native and natural, presence confident in Wayne, Sanpete, Sevier, and Piute counties, unknown in Garfield County
Reptiles			
Desert night lizard	*Xantusia vigilis*	Sensitive	Sensitive – restricted or specialized habitat—native and natural, presence confident in Garfield County
Glen Canyon chuckwalla	*Sauromalus obesus multiforaminatus*	Sensitive	Sensitive—declining population and limited range—native and natural, presence confident in Garfield County
Plateau striped whiptail	*Cnemidophorus velox*	Sensitive	Sensitive – declining population and limited range – native and natural, presence confident in Garfield County
Southwestern blackheaded snake	*Tantilla hobartsmithi*	Sensitive	Sensitive—restricted or specialized habitat—native and natural, presence confident in Garfield County & probable in Wayne County
Utah milk snake	*Lampropeltis triangulum taylori*	Sensitive	Sensitive—declining population, distribution, and/or habitat, presence confident in Sanpete County
Utah mountain kingsnake	*Lampropeltis pyromelana infralabialis*	Sensitive	Sensitive—restricted or specialized habitat—native and natural, presence probable in Garfield County, and presence confident in Wayne County
Birds			
Bald eagle	*Haliaeetus leucocephalus*	Threatened	Threatened
Black tern	*Chlidonias niger*	Sensitive	Sensitive—declining population, distribution and/or habitat
Burrowing owl	*Speotyto cunicularia*	Sensitive	Sensitive—declining population, distribution, and/or habitat—native and natural, presence probable in Garfield, Piute, and Sanpete counties, possible in Sevier and Wayne counties
Black swift	*Cypseloides niger*	Sensitive	Sensitive
Common yellowthroat	*Geothlypis trichas*	Sensitive	Sensitive—declining population, distribution, and/or habitat—origin data uncertain, presence probable in Sanpete, Sevier, Piute, Wayne, and Garfield counties
Grasshopper sparrow	*Ammodramus savannarum*	Sensitive	Sensitive
Lewis' woodpecker	*Melanerpes lewis*	Sensitive	Sensitive—declining population and limited range—native and natural, presence possible in Garfield and Piute counties
Long-billed curlew	*Numenius americanus*	Sensitive	Sensitive—declining population and limited range
Mountain plover	*Charadrius montanus*	Sensitive	Sensitive
Northern goshawk	*Accipiter gentiles*	Sensitive	Sensitive—declining population, distribution, and/or habitat
Osprey	*Pandion haliaetus*	Sensitive	Sensitive—restricted or specialized habitat—native and natural, presumed extirpated in Sevier and Garfield counties

Common Name	Scientific Name	BLM Status	Utah Division of Wildlife Resources Status
Peregrine falcon	*Falco peregrinus*	Federally delisted but still protected	State Endangered—origin data uncertain, presence possible in Garfield, Sanpete, Sevier, and Wayne counties
Sage grouse (Map 28)	*Centrocercus urophasianus*	Sensitive	Sensitive—declining population and limited range—native and natural, presence confident in Garfield, Piute, Wayne, and Sevier counties, presumed extirpated in Sanpete County
Short-eared owl	*Asio flammeus*	Sensitive	Sensitive—declining population, distribution and/or habitat—native and natural, presence probable in Sanpete County
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	State Endangered—native and natural, presence confident in Garfield County
Spotted owl	*Strix occidentalis*	Threatened	State Threatened—native and natural, presence confident in Garfield and Wayne counties
Swainson's hawk	*Buteo swainsoni*	Sensitive	Sensitive—declining population, distribution, and/or habitat—native and natural, presence possible in Garfield, Piute, Sanpete, Sevier, and Wayne counties
Three-toed woodpecker	*Picoides tridactylus*	Sensitive	Sensitive – restricted or specialized habitat, native and natural, presence probable in Piute, Sevier, and Wayne counties
Williamson's sapsucker	*Sphyrapicus thyroideus*	Sensitive	Sensitive—restricted or specialized habitat—origin data uncertain, presence confident in Garfield County, probable in Sevier and Sanpete County, probable in Piute and Wayne counties
Yellow-breasted chat	*Icteria virens*	Sensitive	No status—native and natural, presence probable in Sanpete, Sevier, Piute, Wayne, and Garfield counties
Western yellow-billed cuckoo	*Coccyzus americanus*	Candidate	Candidate
Mammals			
Allen's big-eared bat	*Idionycteris phyllotis*	Sensitive	Sensitive—restricted or specialized habitat—native and natural, presence confident in Garfield County
American pika	*Ochotana princeps*	Sensitive	Sensitive—restricted or specialized habitat—native and natural, presence confident in Sanpete, Sevier, Wayne, and Garfield counties
Big free-tailed bat	*Nyctinomops macrotis*	Sensitive	Sensitive
Brazilian free-tailed bat	*Tadarida brasiliensis*	Sensitive	Sensitive—declining population and limited range—native and natural, presence confident in Piute and Sevier counties
Dwarf shrew	*Sorex nanus*	Sensitive	Sensitive
Fringed myotis	*Myotis thysanodes*	Sensitive	Species of special concern—natural and native, presence confident in Garfield County
Northern flying squirrel	*Glaucomys sabrinus*	Sensitive	Sensitive – restricted or specialized habitat—native and natural, presence confident in Garfield and Sanpete counties
Ringtail	*Bassariscus astutus*	Sensitive	Sensitive—restricted or specialized habitat—native and natural, presence confident in Sevier County
Spotted bat	*Euderma maculatum*	Sensitive	Sensitive
Townsend's big-eared bat	*Corynorthinus townsendii*	Sensitive	Sensitive—declining population and limited range—native and natural, presence confident in Sanpete, Sevier, and Wayne counties
Utah prairie dog	*Cynomys parvidens*	Threatened	State Threatened—native and natural, presence confident in Garfield, Piute, Sevier, and Wayne counties
Western red bat	*Lasiurus blossevillii*	Sensitive	Sensitive

Common Name	Scientific Name	BLM Status	Utah Division of Wildlife Resources Status
Fish			
Bluehead sucker	*Catostomus discobolus*	Sensitive	Sensitive—declining population, distribution, and/or habitat—native and natural, presence confident in Wayne and Garfield counties
Bonneville cutthroat trout	*Oncorhynchus clarki utah*	Sensitive	Conservation species—native and natural in Garfield County—presumed extirpated
Flannelmouth sucker	*Catostomus latipinnis*	Sensitive	Sensitive—declining population, distribution, and/or habitat—native and natural, presence confident in Wayne and Garfield counties
Leatherside chub	*Gila copei*	Sensitive	Sensitive—declining population, distribution, and/or habitat—native and natural, presence confident in Sanpete, Sevier, and Garfield counties

Fish and Wildlife—Issues and Opportunities

While BLM does not explicitly manage wildlife, it works with State and Federal wildlife management agencies to manage species habitat. Major issues that interact with wildlife habitat management include mineral development, recreation, grazing, and road access. Threatened and Endangered species issues are also an important component of wildlife habitat management. Ensuring the protection of Threatened and Endangered species is mandated under the Endangered Species Act and necessary for those species that exist in the RFO. Another component of wildlife habitat management for the RMP to address is nonnative species and how to manage their presence.

Scoping comments generally supported the presence of wildlife in the RFO, but suggested different approaches for BLM to provide suitable habitat and opportunities. Some comments focused on maintaining big game species while others emphasized native species management. A number of comments suggested ways that BLM could improve wildlife administration with different management actions, better science, and improved communication. Coordination with State and Federal wildlife agencies was clearly an important issue to those making comments.

- This planning effort may update the wildlife and habitat inventories to assist in identifying measurable objectives for important wildlife habitats including desired future conditions, designation of priority species and habitats (special status species), and identifying opportunities or restrictions needed to achieve management objectives.
- Special status species locations, populations, and habitats need to be documented. Conservation and protection strategies should be included in the new RMP. A new species list should be requested from USFWS and consultation will be initiated for species listed since the five existing LUPs were developed. Strategies should be developed to keep the list current in the RMP through plan maintenance. New recovery plans and conservation agreements should be incorporated into the plan and current science will be considered.
- Current HMPs will be reviewed and priorities for revision should be established in the new RMP. Schedules for new HMPs, bison in particular, could also be set.
- Prescriptions could be included from the sage grouse management guidelines related to the protection of buffer zones around leks, etc., as well as the general management of the sagebrush ecosystem to ensure that the integrity of sage grouse habitat is protected. The Parker Mountain Adaptive Resource Management Group should be used to develop conservation strategies and management prescriptions for sage grouse.

- The RMP effort should evaluate UDWR plans for transplants and include its goals and objectives and forage allocation needs. Strategies should be reviewed to accommodate future transplants and reallocation of forage through plan maintenance.
- Current forage allocations need to be evaluated, particularly where big game species have moved into new areas or where transplants or reintroductions are planned or have occurred.
- Migratory bird populations and habitats need to be identified along with best management practices.
- Best management practices could be developed for actions in and/or near riparian areas.
- Maps or digitized data should be obtained that delineate boundaries for crucial wildlife habitats, as well as designated critical habitat within the RFO.
- Management of the Wildlife Services program should be included in accordance with the national and State MOUs.
- The potential reintroduction, transplant, and translocation of wildlife species, in coordination with UDWR and/or USFWS, should be addressed.
- The means should be provided, through appropriate planning, to evaluate reallocation of AUMs when requests are received as a result of voluntary relinquishments of grazing privileges.
- Forage for desert bighorn sheep in the Hanksville, Burr Point, and Cedar Point allotments should be allocated as directed in the desert bighorn sheep HMP.

3.5 FORESTRY AND WOODLANDS

Before this planning effort, forestry or woodland management has not been a priority within the RFO. During the previous planning period, there was limited demand for forestry and woodland products, which include sales of wood, permits, Christmas trees, post permits, and seed permits. In 2002, a Forestry Management Action Plan was approved by the RFO manager and forwarded to the State office for inclusion in the State Action Plan. This action plan provides basic guidance for proposed forest and woodland management within the RFO. The action plan calls for a proactive approach to forest and woodland management.

Acreages used in this section for forest and woodlands are based on the Forest and Woodland Management Action Plan for the RFO. These acres are different from those used in the vegetation section because of the dissimilar nature of baseline data. Acreage for this section is based on rangeland inventories and professional judgment.

Forestry and Woodlands—Existing Planning Direction

The following list from previous planning documents contains directives regarding forestry and woodland resources. Not all planning documents contain goals and objectives for the management of forest and woodland resources.

Forest MFP, 1977

- There are no goals or objectives addressing forestry, forest products, or forest management in this plan.

Mountain Valley MFP, 1981

- Provide 2,000 cords of firewood and 5,000 fence posts from 195,000 acres of pinyon/juniper woodland each year for the next 5 years in the planning area.
- Provide 400 Christmas trees per year from 195,000 acres of pinyon/juniper woodland for the next 5 years.

Henry Mountains MFP, 1982

- Develop and implement a forestry management program for the Henry Mountains Planning Area.
- Modify the full suppression fire management program for the Henry Mountains Planning Area.

Parker Mountain MFP, 1983

- Provide firewood permits to harvest green, dead, and down timber from the productive forests areas of the Parker Mountain Planning Unit.
- Provide Christmas tree cutting on the productive forestlands on Miners Mountain.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Manage woodland stands to supply woodland products on a sustained basis for fuel wood, posts, pine nuts, and Christmas trees at fair market value.
- Authorize harvest of woodland products that approximates the biological capability of the stands to replace its harvested trees.
- Increase the accessibility to and within the woodland stands to more fully use woodland stands.

Forestry and Woodlands—Existing Management

Forestry and woodlands resources in the RFO are managed according to the Forestry Management Action Plan that was approved by the RFO manager in December 2002. This plan calls for a proactive approach to forest and woodland management. Items outlined in the plan include the following:

- Work with woodcutters using small contracts along with private and commercial woodcutting to improve the health of the pinyon/juniper woodlands and restore desired woodland conditions. This includes completing the necessary NEPA, preparing and administering small contracts.
- Reduce fuels and restore forest and woodland health through a cooperative effort with the RFO and the Interagency Fire Management organization.
- Implement forest and woodland treatments on similar acreage numbers as in 2002 (about 4,000 acres).

Opportunities and Rationale for Increasing Management Activity

- Restore forest and woodland health and reduce hazardous fuel conditions. Because of the absence of wildland fire for a century or more and because of past management of the woodland and forest, they are in an unhealthy situation and present a hazardous fuels problem. The RFO has a goal to maintain Condition Class 1 woodlands and to improve the Condition Class 2 woodlands. The RFO's goal is to create openings in the Condition Class 3 woodlands and thereby change this area to meet Condition Class 1. The RFP plans to accomplish this effort through mechanical treatments (including hand cutting) and prescribed fire. In Fiscal year (FY) 2002, 4,061 acres of woodlands were mechanically treated to reduce hazardous fuels and restore woodland health. Plans are to continue treating 3,000 to 4,000 acres of woodland and forest annually to reduce hazardous fuels and restore woodland and forest health.
- Serious problems with hazardous fuels and disease are apparent in portions of the forest and woodlands in the Henry Mountains. Portions of this area are unavailable to mechanical treatment as a result of WSA status. Problems should be identified and attempts should be made to correct serious problems through prescribed fire or other means that would not impair WSA values.
- BLM has no stand level comprehensive forest and woodland inventories. Inventories at this level are needed to better determine problems, arrive at solutions, and determine opportunities for management improvement. Inventories help determine priority areas for management actions. Inventories are needed to determine the real extent of insect infestation and disease to get a better picture of these kinds problems and what management actions are appropriate. About 385,000 acres of pinyon/juniper woodland and about 2,600 acres of timberland and aspen are identified as areas available for management action. Available forest and woodland include acres where active forest management is not explicitly prohibited by law, regulation, and policy or LUP decision, such as lands outside WSA areas or Wild and Scenic River Corridors.
- Monitoring is needed to determine treatment effectiveness and the best methods to reduce hazardous fuels restoring forests and woodlands health.
- There is an increasing demand for seeds from wildland sources and certain forest products (i.e., collection of live plants).

Healthy Forest Restoration Act of 2003

The Healthy Forest Restoration Act of 2003 will complement the National Fire Plan by reducing unnecessary regulatory obstacles and allowing more effective actions. The act includes measures to

reduce risks of damage to communities, municipal water supplies, and Federal lands from uncharacteristically intense wildland fires. Additionally, the act seeks to authorize grant programs to improve the commercial value of forest biomass, enhance efforts to address threats to forest and rangeland health, and to promote systematic information gathering to address the impacts of insect infestation. Coupled with the Healthy Forest Initiative of 2002, this direction seeks to improve biological diversity and enhance carbon sequestration.

Forestry and Woodlands—Resource Condition

Forested and woodland areas within the RFO range from oak and pinyon/juniper stands to aspen, ponderosa pine, Douglas fir, white fir, Engleman spruce, and limber pine. Generally, lower elevations (6,000 feet to 8,500 feet) are dominated by woodland species, such as juniper. Middle elevations (7,000 feet to 7,500 feet) are a mix of pinyon/juniper, whereas in higher elevations (7,500 feet to 8,000 feet) pinyon and oak brush dominate with the occasional juniper. Pinyon/juniper stands compose the largest forest covertype within the RFO (Map 7).

As elevation increases, timber species dominate the cover type. Between 8,000 feet and 9,600 feet, ponderosa pine and aspen are the major species, whereas Douglas fir, white fir, subalpine fir, Engleman spruce, aspen, and limber pine are found at elevations above 9,600 feet. Generally, timber species are located on north and northwest facing slopes or in canyon bottoms where there is enough soil moisture to sustain timber. The largest concentrations of timber cover types are found in the Henry Mountains and along the border between BLM and USFS public lands (Map 7).

Table 3.5-1 lists other areas in which timber cover types are found within the Mountain Valley and FPUs by county. Some of these locations have good populations of ponderosa pine with expected regeneration while other locations may have only a few trees accessible to harvest. Some locations are inaccessible to harvest without road construction.

Table 3.5-1. Areas with Timber, by County

County	Area
Garfield	Dry Wash, Center Creek, two hollows south of Center Creek and in other pockets in that area, Black Canyon of the East Fork Sevier River, Deer Creek, Pine Creek, Forest Creek, and Pole Canyon.
Piute	Beaver Creek, Bullion Canyon, Deer Flat, Cottonwood Creek, Kingston Canyon, McCardy Canyon, the west face of Parker Mountain, and in a canyon west of the Fishlake turnoff.
Sanpete	Hells Kitchen Canyon, an area south of South Valley, and pockets in Valley Mountains and Sanpitch Mountains.
Sevier	Dry Canyon, in a canyon west of Sage Flat, pockets on Cove Mountain, and the Deer Peak area just east of the USFS boundary.

Pinyon and juniper are the climax species between 6,000 and 8,000 feet, with the majority of stands being old growth. Old growth for this woodland cover type is characterized by a lack of understory, suppressed reproduction, and rapid growth after cutting or chaining understory trees. Dense stands of pinyon/juniper woodlands are found mainly at intermediate elevations with an annual average precipitation of 12 inches to 14 inches.

The RFO has many areas of diseased or insect killed trees in the pinyon/juniper woodlands. In 2003 a large number of pinyon and juniper trees died on the north end of the Henry Mountains and in other areas. This is generally limited to single trees, but scattered throughout the area, in some small patches, usually less than an acre, have been reported. There are reports of insect or disease in timber near the East Fork Sevier River, but the extent of the problem is not verified. Resource specialists are aware of an insect

disease and problems in the timber in the Henry Mountains. The extent of the problem is not known, but it is believed to be expanding and creating a hazardous fuels problem. This problem is occurring in the Mount Ellen-Blue Hills and Mount Pennell WSAs in the Henry Mountains.

It is apparent that pinyon/juniper woodlands are increasing in size and density over a large acreage of RFO. This increase is attributed to the absence of wildland fire for the last century and long-term pinyon/juniper management. Where pinyon/juniper canopy cover is dense with large trees, very few, if any, desirable forage species are present. Plant species diversity is decreasing because of the increasing tree canopy cover.

The boundaries of the pinyon/juniper woodlands are also increasing. Pinyon/juniper woodlands are invading sagebrush areas and are outcompeting desirable forage species. Shrubs and herbaceous reduce erosion better than pinyon/juniper trees. Increasing pinyon/juniper density adversely affects watershed health. Areas with steep slopes and erodible soils in pinyon/juniper tree cover are vulnerable to serious soil erosion. Pinyon/juniper woodlands do not burn in normal precipitation years but during years of drought, the buildup of continuous fuels is a fire hazard.

It is estimated that none of the available forest and fewer than 15 percent of the woodlands fall into Condition Class 1 (about 57,000 acres). Most of these areas will soon need maintenance to prevent these lands from degrading to Condition Class 2. About 60 percent (about 232,000 acres available) of the woodland is in Condition Class 2. Without treatment, a significant percentage of these woodlands is on the threshold of becoming Condition Class 3 within a few years. It is estimated that the remaining 25 percent (about 96,000 acres) is Condition Class 3. It is estimated that about half of the forest area is Condition Class 2 (about 1,297 acres available) and half is Condition Class 3 (about 1,297 acres available). These figures are only estimates; no stand level forest and woodland inventories are available.

Definitions of the Condition Classes:

- **Condition Class 1:** Forestlands and woodlands that contain native vegetation communities where plant composition and structure resembles the historic range of conditions. For the most part, fire regimes in this condition class are within historical ranges and insect or disease activities are considered to be at endemic levels. Thus, the risk of losing key ecosystem components, such as old forest structures, soil productivity, or sensitive species habitat from disturbances such as fire, insect, or disease in these lands is relatively low. Maintenance management such as prescribed fire, mechanical treatments, or preventing the invasion of nonnative weeds is needed to prevent these lands from becoming degraded.
- **Condition Class 2:** Forestlands and woodlands where native vegetation has been moderately altered from the historic range of conditions. As a result, fire regimes have changed and epidemic insect and disease activity threaten these forests, with a moderate risk of losing key ecosystem components as described above. To restore their historical fire regimes and control insect and disease activity, these lands may require some level of restoration through prescribed fire, mechanical or chemical treatments, and the subsequent reintroduction of native plants, or a combination of these activities.
- **Condition Class 3:** Forestlands and woodlands where native vegetation has been significantly altered from their historic range of conditions. Because fire regimes have been extensively altered and forest composition and structure have been significantly altered from the historic condition, the risk of losing key ecosystem components, as described above, from fire or insect and disease activity is high. Consequently, these lands verge on the greatest risk of ecological collapse. Restoration of these lands may require multiple mechanical and/or chemical restoration

treatments. In addition, a high priority need exists for the reintroduction of native species on these lands.

In summary, the absence of wildland fire for more than a century and because forest/woodland management has not been a priority, the RFO's forests and woodlands have been affected. Large areas have lost or risk losing key ecosystem components such as desirable understory plants. The extensive alteration of these areas from fire, disease, and/or erosion could result in extensive ecological change.

Current level of Forest and Woodland Activity

In FY01, RFO and Henry Mountain Field Station issued 647 permits for forest products, and 268 of these were for the collecting of seeds from wildland sources. In FY02, the two offices issued 456 permits for forest products, and109 were for the collection of seeds from wildland sources. Because of the serious drought and the decrease in seed production, the RFO has not sold as many seed permits in FY02. RFO is not selling any seed permits in the fall/winter of 2002/2003 because of the drought.

Since 1995, the RFO has been working with woodcutters using small contracts along with private and commercial woodcutting to improve the health of the pinyon/juniper woodlands in the Otter Creek Narrows area. Between 1995 and 2001, through prescribed burning of clear-cut areas and some seeding, BLM has averaged more than 100 acres of woodland treatment per year. These treatments are to restore areas to more desirable woodland conditions. The RFO plans to continue working with the woodcutters and small contracts to restore desirable woodland conditions.

In FY01 and FY02, in accordance with the National Fire Plan, the RFO and the Interagency Fire Management organization began a cooperative effort to reduce fuels and restore forest and woodland health on a much larger scale. Plans for specific treatment were made, and EAs completed. In FY02, mechanical methods were used to reduce fuels and restore woodland health on 4,061 acres. For FY03, fuel reduction and forest health treatments are progressing and treatment acreages are similar to FY02.

Within the RFO, some areas are exhibiting signs of poor health; consequently, there may be an elevated risk of wildland fire resulting from a lack of specific forest management goals and prescriptions. An evaluation performed by the Utah BLM State office suggests reviewing current forest inventories and completing new inventories to create specific goals and objectives for management.

Forestry and Woodlands—Issues and Opportunities

The RFO Resource Management Planning effort provides a juncture to address issues and opportunities not included in previous planning efforts. Such issues are the result of changes in user behavior, societal shifts, resource demands, and changing national, and State and local policies. This section includes discussion of the issues raised regarding forest and woodlands through scoping, management review, internal agency analysis, and consideration of best management practices.

- Demand for forest products in the RFO is limited and is not increasing for products such as fuel wood. Existing permit systems for commercial and noncommercial harvest of forest products should be evaluated with respect to management objectives. The economic and ecological viability of harvests in these areas may need to be considered in the RMP.
- Existing MFPs and RMPs do not discuss seed and live plant collection. The new plan should address the issue of native seed collection in coordination with the State BLM office and other field offices.
- A few public scoping comments identified forestry-related issues that need to be examined in the RMP process. The specific forestry-related issues were fire management and a desire to see

commercial timber harvesting in the RFO. Those comments mentioning fire management indicated that forested and nonforested areas lacked natural fire regimes and that prescribed burns should be examined as a management tool. Several comments indicated the need for a more complete forest management strategy. These comments pointed out the mandate for sustained yield and a need for cooperation between forest landholders and brought up the possibility of commercial timber harvests in the RFO. Forest management was also described as potentially beneficial to watershed, wildlife, and livestock management.

- Forest health includes the understory species important for wildlife habitat, erosion control, forage, and ecosystem stability. Pinyon/juniper woodlands tend to outcompete the understory portion of the ecosystem. Prescriptions in the plan need to address the active management of pinyon/juniper woodlands through mechanical means and natural or prescribed fire treatments and reseeding that can assist in redevelopment of more desirable species in building the vegetation understory.
- Potential green woodcutting, post and pole, and Christmas tree harvest areas should be identified and coordinated with the fire and range programs.

3.6 LANDS AND REALTY

Lands and realty encompasses issues of land disposal, acquisition, rights-of-way and right-of-way corridors, withdrawals, and transportation systems. Though FLPMA directed BLM to retain public lands, lands and realty issues arise regularly, often accompanying other resources or resource concerns. This section addresses each of these areas as they apply to the RFO.

Lands/Realty—Current Land Use Plan Direction

Forest MFP, 1977

- Provide a ½-mile-wide utility systems corridor across the unit for transfer of electrical energy from areas east of the Wasatch Plateau to the Wasatch Front and the West Coast areas.
- Dispose of isolated and disconnected tracts of public lands within the unit.
- Provide public lands for commercial development on Interstate Highway 70 near Fremont Junction.

Mountain Valley MFP, 1981

- Eliminate the unauthorized agricultural use of public lands.
- Improve BLM land quality and minimize environmental degradation on authorized waste disposal sites located in the towns of Gunnison, Mayfield, Salina, Monroe, and Circleville by the end of 1982.
- Correct the unauthorized use and eliminate the degradation to BLM lands caused from open dumping practiced by the communities of Elsinore, Sevier, Burrville, Koosharem, Marysvale, and Kingston by the end of 1982.
- Upgrade the quality of BLM land on an unauthorized dumpsite previously used by the town of Venice to conform as close as possible to the original characteristic of the land by the end of 1981* (T. 23 S., R. 2 W. Sec. 24).
- Correct existing hazardous conditions associated with open lime pits located in T. 19 S., R. 1 E., Sections 8 and 18, and an open mine shaft located in T. 29 S., R. 3 W., Section 5, by 1981.
- Provide a transportation corridor for the Utah Department of Transportation (UDOT) connecting highway link in the Interstate system, which will cross about 11 miles of public land lying parallel to U.S. 89 from Sevier-Cove to Salina in Sevier County.
- Provide a transportation corridor for the UDOT's highway realignment proposal for U.S. 89, which will cross 1.5 miles of BLM land in two places: the first segment crossing about 1.5 miles south of the town of Junction, the other crossing a little less than 1 mile from Circleville.
- Adjust the boundaries on the lands administered by BLM and the National Forest System.
- Eliminate the community of Auroras unauthorized use of public lands for a pipeline right-of-way for transportation of culinary water.

Henry Mountains MFP, 1982

- Provide a transmission line corridor to service areas located in the southern portion of the planning area.
- Eliminate those access problems identified in the URA.
- As the need arises, consolidate or adjust public land ownership within those special management areas where BLM goals are in conflict with other government agency goals.
- Provide a transportation corridor for Garfield County's portion of the Notom to Bullfrog road.
- As the need arises, provide the use of public lands for the construction of the Lower Fremont River reservoir and hydroelectric generating plant to be located between the east boundary of Capitol Reef Nation Park and the town of Hanksville.

- Provide arable public lands for disposal for agricultural purposes if irrigation water is made available form the Lower Fremont River dam project.
- Provide public lands in exchange for private lands in the planning area.

Parker Mountain MFP, 1983

- Manage five solid waste disposal sites located within the planning unit to minimize environmental degradation and maintain BLM land quality.
- Correct Wayne County's unauthorized use of public lands for a communication site located in the NW1/4SE1/4NW1/4 T. 28 S., R. 2 E., Sec. 4.
- Provide about 11 miles of public land to accommodate the proposed IPP transmission line for the transfer of electrical energy from the IPP proposed plant site in Wayne County to various metropolitan areas in southern California and rural areas in Utah and Nevada.
- Correct existing hazardous conditions associated with two abandoned mine shafts and one abandoned mine tunnel located on Miners Mountain.
- Correct Teasdale's unauthorized use of about 25 acres of land for a waste disposal site located at the corner of sections 9, 10, and 15, T 29 S., R. 4 E., and improve the land quality of the area.
- Satisfy the requirements contained in the Public Sale Act of 1968 (Unintentional Agricultural Trespass Act) and Federal Land Policy and Management Act of 1976 by proposing sale of 65 acres.
- Make public land available to accommodate expansion of the electrical power transmission system.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Provide more effective public land management and improve land use, productivity, and utility.
- Accommodate community expansion and economic development needs.
- Improve land ownership patterns.
- Provide for the authorization of legitimate uses of public lands by processing use authorization such as rights-of-way, leases, permits, and State land selections in response to demonstrated public needs.

San Rafael RMP, 1991

- Dispose of lands for community expansion or private uses where RMP goals would be met.
- Process permits, leases, and other actions as needed, while applying RMP goals to the extent possible.
- Acquire lands as needed to enhance management of special relict vegetation areas and nonmotorized recreation areas.
- Designate right-of-way corridors.
- Allow discretionary rights-of-way only if RMP goals are met.
- Process other rights-of-way upon request.

Lands/Realty—Existing Management

Within the RFO, BLM administers 2.2 million acres of land surface and mineral estate, and acres of split estate (non-BLM surface management ownership and BLM subsurface minerals). Lands are being managed under classifications, withdrawals, rights-of-way, short-term land permits, and disposal actions.

Management practices on surrounding private lands sometimes directly influence land use management on public lands. Small parcels of public land may lack legal access resulting in unauthorized use. Land ownership adjustments could present opportunities to improve the existing access needs.

Some public lands are currently leased under the Recreation and Public Purposes Act (R&PP) for a variety of uses consistent with the Act.

Rights-of-Way in the RFO Except Lands in the San Rafael Planning Unit

Rights-of-way across public lands are generally granted under Title V of FLPMA and Title I of the Mineral Leasing Act (43 CFR 2800 and 2880). Transportation and utilities' rights-of-way have been granted to qualified individuals, businesses, and government entities for electrical power lines, roads, and pipelines. There are no designated corridors in the RFO area; however, power lines and telephone lines are generally placed in the same areas as the major existing utilities, roads, and highways when possible. These areas have become de facto corridors without having been designated. Rights-of-way plans of development are evaluated to determine what stipulations are needed to protect natural and cultural resources. When feasible, BLM encourages joint uses of rights-of-way and placement of new facilities in existing use areas that have already been disturbed. Rights-of-way in the RFO are generally issued under Title V of FLPMA in response to public demand. For Federal highway purposes, BLM issues a letter of consent to the Federal Highway Administration that in turn issues a highway easement deed to the UDOT.

The RFO has about 436 active rights-of-way for minor distribution power lines, irrigation pipelines, roads, communication sites, and various other land uses. Currently, 36 communication sites exist throughout the RFO area for television, radio, and other communication facilities.

Other land use authorizations issued are 2,920 permits for short- and long-term authorizations for uses ranging from filming on public land to temporarily authorizing trespass until the trespass use can be eliminated and/or resolved.

Rights-of-Way in the San Rafael Planning Unit

Administratively recognized rights-of-way and FLPMA rights-of-way will be managed in accordance with an MOU between the Bureau and the affected counties. Lands available for rights-of-way are divided into four major categories:

- Lands in designated rights-of-way corridors where standard operating procedures apply
- Lands outside designated corridors where standard conditions apply
- Areas to be avoided and where special conditions may apply after site-specific NEPA
- Areas to be excluded.

Access and Roads in the RFO

Roads in the RFO are maintained by the State of Utah, Sevier, Piute, Sanpete, Wayne, and Garfield counties, BLM, USFS, and private individuals and corporations. There are also trails maintained by BLM. There are two airplane landing strips maintained by individuals and corporations. Rights-of-way for some roads in the RFO have been asserted pursuant to RS 2477 by the counties.

Within the Henry Mountains Field Station area, 3,712 miles of roads have been identified. Wayne and Garfield counties have asserted ownership of most of these roads under RS 2477. The roads asserted pursuant to RS 2477 in the remaining portion of the RFO have not been digitized or measured. UDOT is currently working on assertions for the roads identified as UDOT roads. No administrative determinations have been made concerning the RS 2477 assertions.

Withdrawals

Withdrawals are formal actions that set aside, withhold, or reserve Federal land by statute or administrative order for public purposes. Withdrawals are often used to preserve sensitive environmental values, protect major Federal investment in facilities or other improvements, support national security, and provide for public health and safety. Withdrawals segregate a particular portion of public land and suspend operation of the public land laws (withdrawn from settlement, sale, location, or entry), and prevent any disposition of public lands or resources involved in certain types of land use applications. About 14,230 acres of public land in the RFO are segregated by withdrawals.

Lands shown in Table 3.6-1 were segregated from entry under general mining laws and from surface use and occupancy under the mineral leasing laws.

Table 3.6-1. Existing Withdrawals on Public Lands—RFO

Withdrawal Type	Actions Withdrawn	Affected Acres
Public Water Reserve	Nonmetaliferous metals	12,130
Henry Mountains Administrative Site	All locatable minerals	40
Federal Energy Regulatory Commission	Land entry	1,990
Power Site	Land entry	72.8
Total		**14,232.8**

Source: BLM LR2000

Land Disposal

Land disposal actions are generally in response to public requests. Land sales must be identified in an RMP and are required to meet one of the following three criteria.

- The lands meet disposal criteria as outlined in Section 203 and 206 of FLPMA.
- Sale or exchange of the land is not precluded by Federal mandate, such as the Endangered Species Act or the National Historic Preservation Act.
- The land is not more suitable for other resource management and development such as wilderness, grazing, and recreation as identified in the RMP.

All other land disposal actions are required to meet one of five criteria, as defined in the Mountain Valley, Henry Mountains, and Parker Mountain MFPs. The five criteria contained in those plans are as follows.

- Disposal action is in the public interest and accommodates the needs of State, local, or private entities, including needs for the economy, community growth, and expansion and are in accordance with other land use goals and objectives and RMP/MFP planning decisions.
- Disposal action results in a net gain of important and manageable resource values on public lands such as crucial wildlife habitat, significant cultural sites, high value recreation areas, quality riparian areas, live water, Threatened and Endangered species habitat, or areas key to the maintenance of productive ecosystems.
- Disposal action ensures the accessibility of public lands in areas where access is needed and cannot otherwise be obtained.
- Disposal action is essential to allow effective management of public lands in areas where consolidation of ownership is necessary to meet resource management objectives.
- Disposal action results in the acquisition of lands which serve a national priority as identified in national policy directives.

Land title transfers in the RFO area have included public sales, State selections, R&PP transfers, exchanges, and Desert Land Entries (DLE). Local officials have requested that lands be made available around towns for community expansion. In addition, several requests from individuals have been received for public lands to be made available for sale or exchange.

Lands identified for disposal is classified for disposal by using the following three-step method.

1. Analyze each proposed disposal to determine what effects the proposed action will have on the socioeconomic, and resource values.
2. Establish the fair market value through appraisal.
3. Distribute public notification of the details of the proposed disposal for public comment.

The development of a disposal plan aids current management in its efforts to identify preferred annual rate of lands availability, method of priority establishment, and means of coordinating lands disposal programs with adjacent planning units and other agencies. It also helps management to ensure that no major investments (i.e., seeding, fences, roads) are made on lands identified for disposal.

Transportation in the RFO

BLM and the counties maintain roads within the RFO. BLM policy is to develop and maintain roads that provide access for BLM personnel for resource management purposes. RFO personnel identify which roads, public airports, backcountry airstrips, and Air Route Traffic Control Facilities (ARTCF) require maintenance from year to year, and this, combined with the experience of BLM operations staff dictates which roads will be maintained and improved.

Cadastral Survey

The BLM's USO currently conducts the RFO's cadastral survey. Areas of very rough terrain are presently not surveyed. Surveys are generally completed in areas of high use. State sections (normally sections 2, 16, 32, and 36 in each township) are surveyed.

Flood Plains

Certain areas in the RFO have been identified as flood plains by the Department of Housing and Urban Development (HUD). It is general practice that public lands in flood plains should be retained by BLM and reserved from development or structural development to allow for normal function of the flood plains without damage to structure or development.

Lands/Realty—Resource Condition

The RFO encompasses about 2.2 million acres of public land in Sanpete, Sevier, Piute, Wayne, and eastern Garfield counties, and the mineral estate under the adjoining National Forests. Private and state land is available adjacent to the communities for residential, commercial, and educational expansion. Isolated tracts of Federal land are located near some communities that could be used for community expansion should the need arise and qualifications are met. Most public lands within the resource area are managed for multiple use.

At any given time, several land actions are in process. Active land actions are listed below.

- Currently no land tenure adjustments are identified in the RFO.
- One administrative exchange is in process at present, involving lands in Wayne County near Road Creek. This proposed administrative exchange involves the Cedar City and Dixie Field

Offices and Western Resource Management. A completion date for this exchange has not been identified.

- There is one administrative site withdrawal in the Henry Mountain Area near the town of Hanksville.

Rights-of-Way

Right-of-way corridors for the public lands, which accommodate existing authorized rights-of-way, are to be consistent with the goals, standards, and objectives for natural resources within the RFO. In addition, new right-of-way corridors for interstate and intrastate right-of-way facilities are required to meet current and 10- to 15-year demand forecasts for right-of-way commodities (e.g., power lines, pipelines, wind energy, communication facilities, off-lease coal facilities, electric power transmission and distribution lines, county road system changes, access to private land, telephone and waters systems, communication sites, and R&PP leases for community expansion and recreation needs). Right-of-Way Use Areas are identified for broader nonlinear areas to accommodate right-of-way facilities within high intensity use areas (e.g., mineral development areas, rapidly expanding community growth areas, mountaintop communication site locations, and potential wind energy resource development areas). Right-of-way corridors and Right-of-Way Use Areas are preferred locations for the siting of right-of-way facilities as explained in BLM Manual 2801.11 and .12. BLM management will identify, as necessary and appropriate to particular alternatives, right-of-way avoidance and exclusion areas for areas with special or sensitive resources (e.g., proposed Areas of Critical Environmental Concern (ACEC) or National Recreation Area (NRA), WSAs).

Lands and Realty—Issues and Opportunities

Perhaps more obvious than other resources, lands and realty has several opportunities for either land tenure adjustments, granting rights of way, or selling parcels of public land. Though obvious on the surface, several lands and realty related issues were identified in public and internal scoping. The following list identifies those issues.

- Existing LUPs did not address land tenure adjustment or need updating. The new planning effort needs to update lands identified for disposal, exchange, and acquisition. Also, a plan should be developed for documenting land tenure adjustments on the MTPs as well as the corporate database.
- Lands identified in the plans for acquisition, disposal, exchanges, etc., need to be prioritized for implementation.
- None of the current LUPs contain decisions related to how lands will be managed after acquisition. A decision that would direct management of acquired lands that would apply to the RFO should be developed.
- The San Rafael RMP and Cedar-Garfield-Beaver-Antimony RMP discussed utility corridors, but the other plans did not identify utility corridors. A Western National Corridor Plan exists, which includes the RFO, but it was developed after the RMP and MFP were completed. Terms and conditions need to be identified for the corridors.
- Rights-of-way corridors do cross RFO boundaries, but they are not consistent in areas where they cross boundaries.
- The old LUPs identified withdrawals, but nothing has been done to implement the withdrawals review process. There needs to be some guidance concerning withdrawal review.

- None of the plans address the issue of terminating oil shale, coal, and phosphate classifications. There are withdrawals that need to be identified that no longer serve a purpose and carry through with termination of unnecessary withdrawals as well as developing management plans for retained withdrawals.
- The wording in the new plan needs to be improved to better address disposal and acquisitions.
- Access issues need to be addressed, related to both BLM administrative and access for the public.
- Trespass resolution was not addressed in any of the plans.
- BLM recently issued an IM related to protecting municipal culinary water sources that should be addressed in the new plan. The criteria to protect municipal culinary water resources need to be considered in the new plan, and the new plan should clarify the locations, process, and size of the area to be protected.
- Floodplains are a critical element of the human environment that should be considered in EAs. BLM needs to identify locations and restrictions.

3.7 LIVESTOCK GRAZING/RANGELAND

This section combines the interrelated rangeland resources and livestock grazing use. It should be noted early in this section that rangeland management includes more than simply managing livestock grazing; it includes wildlife habitat management, recreation management, vegetation management, and fuels management, and other resources. The management of the rangeland resource extends to many resource uses, one of which is livestock grazing. Livestock grazing, however, is an important use of rangeland resources for ecological and economic reasons.

Livestock Grazing/Rangeland—Existing Planning Direction

Forest MFP, 1977

- Improve range conditions from poor to fair on the 6,603 acres currently in poor range condition within 15 years.
- Improve range conditions from fair to good on the 36,821 acres currently listed as fair range condition within 15 years.
- Provide forage, living space, and protection for the five wild horses of the unit.

Mountain Valley MFP, 1981

- Within 20 years, improve range conditions on 36,780 acres from fair to good in 14 allotments and increase the carrying capacity from the estimated initial capacity of 6,217 AUMs to 10,788 AUMs after improvements.
- Improve range condition from poor to fair on 14,641 acres and from fair to good on 114,381 acres and reverse the downward trend on 19,711 acres.
- Maintain 38,340 acres presently in optimum ecological condition (33,179 acres in good condition, 3,450 acres in fair condition, and 1,711 in unclassified), and continue current forage production of 2,777 AUMs.
- Increase the grazing capacity from 11,587 AUMs to 23,304 AUMs on 15 allotments within the 20 years, and improve range condition from fair to good on 102,176 acres and from poor to fair on 5,521 acres.
- Reverse the declining trend in range condition on the 11 allotments totaling 19,855 acres by 1985; maintain 13,228 acres in good condition; and improve 21,261 acres from fair to good and 5,623 acres from poor to fair condition.
- Simplify the administration, effectiveness, and utilization of managing 41 allotments and small, isolated tracts totaling 247,382 BLM acres by 1985.

Henry Mountains MFP, 1982

- Maintain and improve range.
- Implement grazing use levels for livestock and big game, which do not exceed the carrying capacity.
- Identify public lands where livestock grazing will be excluded considering terrain characteristics, potential of the soil and vegetation, presence of undesirable vegetation, or presence of other resources that may require special management or protection (e.g., Special Recreation Management Areas).
- Identify use of the vegetation resources by livestock considering wildlife, wild horses and burros, and vegetation requirements for watershed protection, visual resources, and other uses.
- Identify expressed terms of utilization levels of key forage species, desired plant community (DPC) and/or ecological status, consumptive use of forage, and protection of important resources values.

- Continue present grazing system on 10 allotments.
- Implement a grazing system on seven allotments.
- Continue season-long grazing on four allotments.
- Implement season-long grazing on one allotment.
- No livestock grazing on five allotments. Total of 10 areas covering 24,300 acres and 2,975 AUMs unallotted.

Parker Mountain MFP, 1983

- Within 15 to 20 years, improve cattle forage condition on 21,159 acres of the Seven-Mile Allotment (e.g., Tanner, Taylor Farm, Brian, Rees Allotments) by changing plant composition from brush and relatively low palatability and grazing value to species of greater value. (Reduce the percentage of sagebrush and rabbitbrush from 60–80 percent, to 30–40 percent; increase cool season grass and bitterbrush from 5–15 percent, to 30–50 percent.)
- Maintain existing livestock range condition and trend on the following allotments of the planning unit: Bicknell Spring-cattle (Cedar Peak, Hare Lake, Smooth Knoll sheep); Bicknell Winter-cattle (Flat Top, King Sheep); Cyclone-Co-op-cattle (Co-op, Cyclone-sheep); Loa Winter-cattle (Long Hollow, Terza Flat, Deleeuw-sheep), Fishlake, Cedar Grove, and Post Hollow, totaling 156,067 acres, about 67 percent of the planning unit.
- Improve the present range condition class for livestock grazing from poor and fair to good on the allotments listed under RM-3.1, and as shown on the overlay by continuing with the current grazing program as to numbers and season of use, but modified to ensure no more than 40 percent use on grasses in the spring and 60 percent use of browse species in the winter. Key species are Indian ricegrass, needle and thread Grass (*Stipa comata*), squirreltail, and saltbush, as found on the various allotments and by limited range improvement programs.
- Reverse the apparent downward trend on the Miner's Mountain and raise the condition class for cattle grazing from fair to good on 4,700 acres of range suitable and potentially suitable for grazing, including 1,200 acres of crested wheatgrass seeded in 1965 and 3,500 acres of "native" range that would respond to treatment.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Reduce or eliminate rangeland resource problems on allotments identified for intensive management while maintaining a production goal of about 60,000 AUMs of livestock forage in the long term.
- Maintain or improve current resource conditions on identified for maintenance of current management allotments while permitting about 23,000 AUMs of livestock grazing use over the long term.
- Continue current management on allotments identified for custodial management while preventing further resource deterioration.

San Rafael RMP, 1991

- Continue to manage rangelands to produce livestock forage and water to meet current demand so long as critical soils areas, scenic values, and crucial wildlife habitat are protected.
- Provide special management for certain cultural values.
- Protect the relict vegetation areas within the Bowknot Bend and Flat Tops ACECs to provide an ecological baseline for range studies.

Livestock Grazing/Rangeland—Existing Management

Grazing and Rangeland resources are currently managed according to the Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah. These standards and guidelines are listed below.

Standards For Rangeland Health

Rangeland Health Standard 1

Upland soils exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform as indicated by—

- Sufficient cover and litter to protect the soil surface from excessive water and wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss by evaporation.
- Absence of indicators of excessive erosion such as rills, soil pedestals, and actively eroding gullies.
- Appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the DPC, where identified in an LUP conforming to these standards, or (2) where the DPC is not identified, a community that equally sustains the desired level of productivity and properly functioning ecological conditions.

Rangeland Health Standard 2

Riparian and wetland areas are in proper functioning condition. Stream channel morphology and functions are appropriate to soil type, climate, and landform as indicated by—

- Stream bank vegetation consisting of or showing a trend toward species with root masses capable of withstanding high stream flow events. Vegetation cover adequate to protect stream banks and dissipate stream flow energy associated with high-water flows, protect against accelerated erosion, capture sediment, and provide for groundwater recharge.
- Vegetation reflecting: DPC, maintenance of riparian and wetland soil moisture characteristics, diverse age structure and composition, high vigor, large woody debris when site potential allows, and providing food, cover, and other habitat needs for dependent animal species.
- Revegetating point bars; lateral stream movement associated with natural sinuosity; channel width, depth, pool frequency, and roughness appropriate to landscape position.
- Active floodplain.

Rangeland Health Standard 3

Desired species, including native, Threatened, Endangered, and special status species, are maintained at a level appropriate for the site and species involved, as indicated by:

- Frequency, diversity, density, age classes, and productivity of desired native species necessary to ensure reproductive capability and survival.
- Habitats connected at a level to enhance species survival.
- Native species reoccupy habitat niches and voids caused by disturbances unless management objectives call for introduction or maintenance of nonnative species.

- Habitats for Threatened, Endangered, and special status species managed to provide for recovery and move species toward delisting.
- Appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the DPC, where identified in an LUP conforming to these standards, or (2) where the DPC is not identified a community that equally sustains the desired level of productivity and properly functioning ecological processes.

Rangeland Health Standard 4

BLM will apply and comply with water quality standards established by the State of Utah (R.317-2) and the Federal Clean Water and Safe Drinking Water Acts. Activities on BLM lands will fully support the designated beneficial uses described in the Utah Water Quality Standards (R.317-2) for Surface and Groundwater *as indicated by—

- Measurement of nutrient loads, total dissolved solids (TDS), chemical constituents, fecal coliform, water temperature, and other water quality parameters.
- Macro invertebrate communities that indicate water quality meets aquatic objectives.

Guidelines For Grazing Management

Grazing Management Guideline 1

Grazing management practices will be implemented that—

- Maintain sufficient residual vegetation and litter on upland and riparian sites to protect the soil from wind and water erosion and support ecological functions.
- Promote attainment or maintenance of proper functioning condition riparian/wetland areas, appropriate stream channel morphology, desired soil permeability and infiltration, and appropriate soil conditions and kinds and amounts of plants and animals to support the hydrologic cycle, nutrient cycle, and energy flow.
- Meet the physiological requirements of desired plants and facilitate reproduction and maintenance of desired plants to the extent natural conditions allow.
- Maintain viable and diverse populations of plants and animals appropriate for the site.
- Provide or improve, within the limits of site potentials, habitat for Threatened or Endangered species.
- Avoid grazing management conflicts with other species that have the potential of becoming protected or special status species.
- Encourage innovation, experimentation, and the ultimate development of alternative to improve rangeland management practices.
- Give priority to rangeland improvement projects and land treatments that offer the best opportunity for achieving the standards.

Grazing Guideline 2

Any spring and seep developments will be designed and constructed to protect ecological process and functions and improve livestock, wild horse, and wildlife distribution.

Grazing Guideline 3

New rangeland projects for grazing will be constructed in a manner consistent with the standards. Considering economic circumstances and site limitations, existing rangeland projects and facilities that conflict with the achievement or maintenance of the standards will be relocated and/or modified.

Grazing Guideline 4

Livestock salt blocks and other nutritional supplements will be located away from riparian/wetland areas or other permanently located, or other natural water sources. It is recommended that the locations of these supplements be moved every year.

Grazing Guideline 5

The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands nonintrusive, nonnative plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) cannot achieve ecological objectives as well as nonnative species, and/or (d) cannot compete with already established nonnative species.

Grazing Guideline 6

When rangeland manipulations are necessary, the best management practices, including biological processes, fire, and intensive grazing, will be used before the use of chemical or mechanical manipulations.

Grazing Guideline 7

When establishing grazing practices and rangeland improvements, the quality of the outdoor recreation experience is to be considered. Aesthetic and scenic values, water, campsites, and opportunities for solitude are among those considerations.

Grazing Guideline 8

Feeding of hay and other harvested forage (which does not refer to miscellaneous salt, protein, and other supplements), for the purpose of substituting for inadequate natural forage will not be conducted on BLM lands other than in (a) emergency situations where no other resource exists and animal survival is in jeopardy, or (b) situations where the Authorized Officer determines such a practice will assist in meeting a standard or attaining a management objective.

Grazing Guideline 9

To eliminate, minimize, or limit the spread of noxious weeds, (a) only hay cubes, hay pellets, or certified weed-free hay will be fed on BLM lands, and (b) reasonable adjustments in grazing methods, methods of transport, and animal husbandry practices will be applied.

Grazing Guideline 10

To avoid contamination of water sources and inadvertent damage to nontarget species, aerial application of pesticides will not be allowed within 100 feet of a riparian/wetland area unless the product is registered for such use by EPA.

Grazing Guideline 11

On rangelands where a standard is not being met, and conditions are moving toward meeting the standard, grazing may be allowed to continue. On lands where a standard is not being met, conditions are not improving toward meeting the standard or other management objectives, and livestock grazing is deemed responsible, administrative action with regard to livestock will be taken by the Authorized Officer pursuant to CFR 4180.2(c).

Grazing Guideline 12

Where it can be determined that more than one kind of grazing animal is responsible for failure to achieve a standard, and adjustments in management are required, those adjustments will be made to each kind of animal, based on interagency cooperation as needed, in proportion to their degree of responsibility.

Grazing Guideline 13

Rangelands that have been burned, reseeded, or otherwise treated to alter vegetation composition will be closed to livestock grazing as follows: (1) burned rangelands, whether by wildland fire or prescribed burning, will be ungrazed for a minimum of one complete growing season following the burn; and (2) rangelands that have been reseeded or otherwise chemically or mechanically treated will be ungrazed for a minimum of two complete growing seasons following treatment.

Grazing Guideline 14

Conversions in kind of livestock (such as from sheep to cattle) will be analyzed in light of Rangeland Health Standards. Where such conversions are not unfavorable to achieving a standard, or they are not in conflict with land BLM use plans, the conversion will be allowed.

Categorization

Grazing allotments in the RFO have been categorized to establish management priorities to achieve cost-effective improvement of rangeland condition and production. This process, called "selective management," puts emphasis (workforce and dollars) on those allotments with the most need and where the most positive benefits could result from public investment. A resource area multidiscipline team has grouped allotments into one of three management categories, based on the following criteria:

Improve (I) Management Allotments

- Present range condition is unsatisfactory.
- Allotments have moderate to high resource production potential and are producing at low to moderate levels.
- Serious resource use conflicts exist.
- Opportunities exist for positive economic return from public investments.
- Present management appears unsatisfactory.

Maintain (M) Management Allotments

- Present range condition is satisfactory or improving.
- Allotments have moderate or high resource production potential and are producing near their potential (or trend is moving in that direction).
- No serious resource use conflicts exist.
- Opportunities may exist for positive economic return from public investments.
- Present management appears satisfactory.

Custodial (C) Management Allotments

- Present range condition is not a factor.
- Allotments have low resource production potential and are producing at or near their potential.
- Limited resource use conflicts may exist.
- Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors.

- Present management appears satisfactory or is the only logical practice under existing resource conditions.

Priorities are established as a ranking of relative importance. As such, each priority should not be considered as preemptive of the next.

- Decisions are issued to initiate rangeland monitoring procedures on allotments where BLM data to support grazing use adjustment is inconclusive or where grazing agreements cannot be reached through negotiations. Following evaluation of monitoring results, signed grazing agreements are obtained or decisions issued, if necessary, for allotments on which negotiated grazing agreements were not obtained.
- Grazing agreements are negotiated on allotments where permittees agree to adjustments in stocking levels or where no change in management is indicated.
- Formal grazing agreements and/or Allotment Management Plans (AMP) are written and implemented on allotments targeted for intensive management (as shown in Table 3.7-1).
- Rangeland monitoring procedures are initiated on allotments with negotiated grazing agreements in the following order:
  - Improve management allotments as prescribed.
  - Maintain management allotments.
  - Custodial management allotments as deemed necessary.

Ecological Conditions and Trends

BLM's rangeland monitoring objective is to gather adequate data on allotments in the (I) Improve and (M) Maintain categories. Rangeland policy requires collection of a minimum of five (5) types of data: (1) actual use, (2) utilization, (3) trend, (4) climate, and (5) supplementary. Frequency and intensity of data collection depend on allotment category and other factors. As of June 1987 Utah BLM started the process to develop State policy as to studies required to meet minimum standards.

Livestock-Biotic Relationships

Riparian areas, although composing the smallest vegetation component within the grazing allotments, have been accessible to livestock historically. Because of lush vegetation, easily available water, and shade, most of these riparian areas have been heavily used in the past. Opportunities exist to repair and improve these areas. Grazing system adjustments, riparian fencing, and livestock water developments are taking place presently and are planned for the future to improve riparian areas currently below potential.

Range improvement projects that may be used in the resource area to meet management objectives include reservoirs, wells, pipelines, guzzlers, catchments, spring developments, riparian enclosures, troughs, tanks, chaining, burning, roller-chopping, seeding (both aerial and drilling), and fencing. Proposed range improvement projects undergo a cost/benefit investment analysis based on BLM manual section 1740 and handbook H-1740-1.

Livestock water is scarce over most of the resource area. Snow provides some water to wintering sheep and cattle, however, if there is insufficient snow, permittees must haul water. Management issues arise when wildlife or wild horses or burros drink the water hauled by permittees for livestock.

In the 1970s, a series of chainings, including about 11,527 acres of the Henry Mountains and Miner's Mountain, were completed in pinyon/juniper woodland sites. The chainings were intended to improve forage for livestock and big game, especially bison, deer, and elk. The practice of chaining has since

become a controversial issue with the various publics and, until the controversy has been settled, no further chaining projects are anticipated in the RFO. BLM is performing maintenance on most of these chainings to remove reinvading trees.

Grazing in the Glen Canyon National Recreation Area

The enabling legislation creating the Glen Canyon National Recreation Areas designated BLM as the management authority for grazing within the NRA. Grazing within the NRA occurs on several large allotments. There have been management issues in this area resulting from the presence of desert bighorn sheep and the potential interaction with domestic sheep.

Interdistrict Agreements

An Interdistrict Agreement between the Moab and Richfield District Managers, signed in 1995, addresses the management in boundary areas and allotments that cross boundaries. Specifically, the agreement identifies which RFO will manage livestock grazing, wild horses and burros, and wildlife habitat in the given boarder allotments. In addition, this agreement defines the administrative responsibility planning and EIS development, as well as range improvement programs on allotments overlapping boundaries.

Resource Allocation

BLM administers grazing on units of land called allotments. Map 8 shows the grazing allotments in the RFO on which livestock are grazed. Maps 9 to 12 show more defined maps where each allotment is identified by name. An allotment is assigned for use by a single permittee or a group (sometimes organized as a grazing association). Livestock grazing is not allowed on public land without authorization. Authorization is an annual or a 10-year-term grazing permit, which is renewable to the same permittee as long as the permittee abides by grazing regulations. A permittee continues to use the same allotment year after year unless the permittee transfers grazing privileges to another permittee, loses them because of serious infractions of the grazing regulations, or leases or sells the base property. Base property is private land used as a base for grazing operation. Grazing privileges are attached to base property and remains with it through change of landowners unless transferred. Table 3.7-1 shows each grazing allotment the RFO manages and the existing active preference for livestock and forage allocation to wildlife.

Table 3.7-1. Forage Allocation—RFO

Allotment Name	Alltmnt Number	Mgmt Category	Current Allotted Use (AUMs)						Kinds of Wildlife Present[1]	Total Active AUMs Allotted
			Livestock		Wildlife					
			Active	Suspnd	Wildlife	Bison	Burro	Total		
Angle Bench	00802	C	356	0	222	0	0	222	D,E	578
Antelope Valley	01733	M	2,349	379	537	0	0	537	D	2,886
Antimony Creek	06045	I	373	0	132	0	0	132	D,E,A	505
Antimony Ranch	06046	C	18	0	36	0	0	36	D,E,A	54
Apple Spring	01702	M	26	165	117	0	0	117	D,E,M	143
Aurora	00200	M	741	324	345	0	0	345	D,E	1,086
Axhandle	01703	M	91	274	234	0	0	234	D,E	325
Axtell	01704	C	39	49	30	0	0	30	D,E	69
Bear Valley	00201	M	150	0	217	0	0	217	D,E	367
Bicknell	00700	C	90	150	29	0	0	29	D,E	119
Bicknell Spring	00701	M	734	0	-	-	-	-	-	734

Allotment Name	Alltmnt Number	Mgmt Category	Current Allotted Use (AUMs)						Kinds of Wildlife Present[1]	Total Active AUMs Allotted
			Livestock		Wildlife					
			Active	Suspnd	Wildlife	Bison	Burro	Total		
Bicknell Winter	00702	M	1,325	0	-	-	-	-	-	1,325
Blue Bench	00100	I	4,601	1,300	179	4	0	183	D,B,A	4,784
Box Creek	00803	M	109	10	108	0	0	108	D,E	217
Bullfrog	00101	I	3,183	976	375	45	0	420	D,E(e),B,S(p)	3,603
Burr Point	00102	I	2,768	1,091	193	15	0	208	D,B(i),A,S	2,976
Burrville	00202	M	48	0	108	0	0	108	D,E	156
Busenbark	00704	--	25	0	5	0	0	5	D	30
Canal	00219	C	357	8	34	0	0	34	D	391
Cannon/Whittaker	09999	C	0	0	172	0	0	172	D,E	172
Cathedral	00600	I	2,616	413	222	0	0	222	D,E,A(i)	2,838
Cedar Grove	00705	C	533	118	211	0	0	211	D,E,A	744
Cedar Peak	00706	M	125	0	205	0	0	205	D,E,A	330
Cedar Point	00103	M	1,962	802	335	6	0	341	D,B(i),A,S	2,303
Center Creek	06047	I	179	0	75	0	0	75	D,E,A	254
Chicken Coop	00203	M	213	0	280	0	0	280	D,E,A	493
Crescent Creek	00104	I	387	73	282	55	0	337	D,B	724
Cyclone	00708	--	148	0	215	0	0	215	D,E,A	363
Cyclone Co-Op	00740	M	128	4	-	-	-	-	-	128
Deer Peak	00602	I	391	0	?	0	0	0	D,E,M	391
Deleeuw	00709	M	100	68	91	0	0	91	D,A	191
Denmark	00224	M	976	0	172	0	0	172	D	1,148
Dez Hickman	09999	--	0	0	6	0	0	6	D	6
Donkey Hill	--	--	15	0	10	0	0	10	D	25
Dry Lake	00813	I	240	0	310	0	0	310	D,E	550
Dry Lakes	09999	--	0	0	143	88	0	231	D,B	231
Dry Wash	06048	I	216	0	62	0	0	62	D,E,A	278
Durkee	00815	I	134	357	455	0	0	455	D,E	589
East Bench	00816	I	762	0	362	0	0	362	D,E,A	1,124
East Fork	00817	C	120	84	86	0	0	86	D,E	206
East Piute	00818	M	212	85	241	0	0	241	D,E	453
Elbow	00819	C	214	274	310	0	0	310	D,E	524
Fayette Cattle	01705	M	1,476	516	537	0	0	537	D,E	2,013
Fishlake	00220	M	737	0	326	0	0	326	D,E,A,M	1,063
Flat Canyon	01706	C	49	301	26	0	0	26	D	75
Flat Top	00712	M	717	0	255	0	0	255	D,A	972
Flint Trail	09999	--	0	0	974	0	0	974	D,S	974
Government Creek	00713	C	91	0	31	0	0	31	D	122
Greenwich Creek	00821	M	33	31	52	0	0	52	D,E	85
Grover	00714	C	80	0	58	0	0	58	D,E	138
Gunnison Valley	01734	I	1,263	1,031	768	0	0	768	D,E	2,031
Gypsum	00205	M	1,029	60	657	0	0	657	D,E,A,M	1,686
Hanksville	00107	I	5,334	1,680	369	18	0	387	D,B(i),A	5,721
Hare Lake	00715	M	355	0	134	0	0	134	D,E,A	489
Hartnet	00603	I	1,802	512	128	0	0	128	D,E,S(p)	1,930

Allotment Name	Alltmnt Number	Mgmt Category	Current Allotted Use (AUMs)						Kinds of Wildlife Present[1]	Total Active AUMs Allotted
			Livestock		Wildlife					
			Active	Suspnd	Wildlife	Bison	Burro	Total		
Hatch Canyon	00822	C	46	0	83	0	0	83	D,E	129
Hayes Canyon	01708	M	300	251	190	0	0	190	D,E	490
Hector Hollow	00716	M	138	0	61	0	0	61	D,E	199
Hodge Range	00823	C	484	0	276	0	0	276	D,E	760
Hop Creek	01709	C	94	146	51	0	0	51	D,E,M	145
Horse Pasture	00717	C	14	26	8	0	0	8	D,E	22
Horse Ridge	01710	C	57	59	84	0	0	84	D,E	141
Horseshoe Canyon South	15100	--	0	0	2,025	0	0	2,025	D,A,S	2,025
Hunt	00206	C	52	0	21	0	0	21	D,E	73
Hunter Spring	00824	M	129	0	216	0	0	216	D,E	345
Indian Hollow	01711	C	154	0	92	0	0	92	D,E,M	246
Jefferey Well	35033	I	2,802	0	?	0	0	0	D,A	2,802
Joe Hickman	00718	C	4	0	8	0	0	8	D,E	12
Johns Valley	06050	C	255	0	106	0	0	106	D,E,A	361
Jones	00207	C	12	0	14	0	0	14	D,E	26
Junction	00826	M	331	0	414	0	0	414	D,E	745
King Sheep	00719	M	161	0	114	0	0	114	D,A	275
Kinston Canyon	00827	C	84	0	104	0	0	104	D,E	188
Koosharem Creek	00221	C	46	0	222	0	0	222	D,E	268
Last Chance	00605	I	1,036	0	?	0	0	?	D,E,A	1,036
Lime Kiln	00720	M	354	0	58	0	0	58	D,E	412
Little Valley	01712	M	798	1,589	184	0	0	184	D,E	982
Loa Winter	00721	M	180	72	-	-	-	-	-	180
Lone Cedar	01713	I	1,050	260	363	0	0	363	D,E	1,413
Long Hollow	00722	M	209	82	198	0	0	198	D,A	407
Lost Creek	00209	M	46	0	146	0	0	146	D,E,A,M	192
Lyman	00723	C	125	48	32	0	0	32	D,E	157
M&O	00607	I	1,217	0	0	?	?	0	D,E	1,217
Manning Creek	00829	C	128	0	384	0	0	384	D,E	512
Maple Canyon	01715	M	135	0	74	0	0	74	D,E	209
Marysvale	00846	M	97	123	325	0	0	325	D,E	422
Middle Hollow	01717	M	82	0	43	0	0	43	D,E	125
Miners Mountain	00724	M	212	307	159	0	0	159	D,E	371
Monroe Co-Op	00222	I	1,038	0	460	0	0	460	D,E	1,498
Mussentuchit	00608	I	1,998	0	?	0	0	0	D,E,A	1,998
Nasty Flat	00108	I	482	0	210	576	0	786	D,E(e),B	1,268
Neff Ranch	00725	C	82	122	91	0	0	91	D,E	173
North Cove Mountain	00211	M	268	0	488	0	0	488	D,E	756
North Freemont	00726	C	230	71	101	0	0	101	D,E	331
North Hollow	01718	M	92	0	101	0	0	101	D,E	193
North Narrows	00832	I	702	196	255	0	0	255	D,E,A	957
Oak Springs	00833	C	296	0	244	0	0	244	D,E,M	540
Ogden	00834	I	286	39	113	0	0	113	D,E	399
P-Hill	09999	C	0	0	296	0	0	296	D,E	296

Allotment Name	Alltmnt Number	Mgmt Category	Current Allotted Use (AUMs)						Kinds of Wildlife Present[1]	Total Active AUMs Allotted
			Livestock		Wildlife					
			Active	Suspnd	Wildlife	Bison	Burro	Total		
Parson Mills	00212	C	21	0	14	0	0	14	D,E	35
Pasture Canyon	15063	I	208	0	?	0	0	0	A	208
Pearson-Lewis	00835	C	114	0	138	0	0	138	D,E	252
Pennell	00109	I	2,274	0	824	1,155	0	1,979	D,E(e),B	4,253
Pine Creek	06051	I	791	0	399	0	0	399	D,E,A	1,190
Piute Dam	00838	C	56	18	34	0	0	34	D,E	90
Plateau	00213	M	340	0	163	0	0	163	D,E,M	503
Poison Creek	06052	M	281	0	212	0	0	212	D,E,A	493
Pole Canyon	06053	M	380	0	115	0	0	115	D,E	495
Post Hollow	00727	M	325	5	132	0	0	132	D,E,A	457
Red Canyon	01719	I	711	893	222	0	0	222	D,E	933
Ricks Pasture	00841	C	11	0	9	0	0	9	D	20
River	00729	C	75	51	14	0	0	14	D	89
River	01720	C	34	22	18	0	0	18	D	52
Robbers Roost	00901	I	3,847	0	2,545	0	581	3,126	D,A,S	6,973
Rock Canyon	01721	I	5,009	420	212	0	0	212	D,E	5,221
Rock Springs	00611	I	4,229	0	?	0	0	0	D,E,A	4,229
Rockies	00110	M	5,872	1,434	1,083	0	0	1,083	D,A,S	6,955
Rocky Ford	00842	M	386	0	388	0	0	388	D,E	774
Rough Canyon	01722	C	328	263	199	0	0	199	D	527
Salls Meadow	00215	M	101	68	321	0	0	321	D,E	422
Sand Ledge	00216	M	31	0	291	0	0	291	D,E	322
Sand Wash	00730	C	33	21	18	0	0	18	D	51
Sandy #1	00111	I	1,088	28	92	0	0	92	D,A(i)	1,180
Sandy #2	00112	I	2,228	0	62	155	0	217	D,B,A(i)	2,445
Sandy #3	00113	C	282	185	21	0	0	21	D,B(i),A(i)	303
Sanpitch	01723	C	48	37	21	0	0	21	D,E	69
Sawmill Basin	09999	--	0	0	181	210	0	391	D,B	391
Seven Mile	00731	I	723	112	165	0	0	165	D,E,A	888
Sevier River	06049	C	80	0	10	0	0	10	D,E	90
Sewing Machine	00902	I	1,599	0	1,064	0	0	1,064	D,S	2,663
Slickrock/Little Rockies	00105	--	0	0	660	0	0	660	D,S	660
Smooth Knoll	00732	M	1,053	0	133	0	0	133	D,E,A	1,186
South Hollow	01724	I	200	92	201	0	0	201	D,E	401
South Narrows	00843	I	670	389	281	0	0	281	D,E,A	951
South Valley	01725	M	849	0	227	0	0	227	D,E	1,076
Spring Branch	00733	C	11	0	35	0	0	35	D,E	46
Steele Butte	00115	I	4,554	0	488	682	0	1,170	D,B,A(i)	5,724
Swedes Canyon	01726	M	428	0	77	0	0	77	D	505
Sweetwater	25086	I	3,922	1,289	?	0	0	0	D,A	3,922
Teasdale Bench	00736	C	98	55	9	0	0	9	D	107
Teasdale Ranch	00737	C	58	0	10	0	0	10	D	68
Ten Mile	00845	M	149	181	207	0	0	207	D,E	356
Terza Flat	00738	M	291	87	162	0	0	162	D,A	453

Allotment Name	Alltmnt Number	Mgmt Category	Current Allotted Use (AUMs)						Kinds of Wildlife Present[1]	Total Active AUMs Allotted
			Livestock		Wildlife					
			Active	Suspnd	Wildlife	Bison	Burro	Total		
Timber Canyon	01727	M	654	0	750	0	0	750	D,E	1,404
Torrey Town	00739	C	388	108	10	0	0	10	D	398
Trachyte	00116	M	3,014	818	391	14	0	405	D,E(e),B(i),A(p),S	3,419
Twelvemile	01728	C	11	88	7	0	0	7	D,E	18
Twist	00223	M	209	158	52	0	0	52	D,E	261
Uinta	01729	C	130	0	20	0	0	20	D,E,M	150
Under the Rim	01730	C	72	214	29	0	0	29	D	101
Washburn	09999	C	0	0	21	0	0	21	D,E	21
Waterpocket	00117	M	3,007	407	206	0	0	206	D,S(p)	3,213
West Freemont	00742	C	83	82	43	0	0	43	D,E	126
West Side	01731	M	405	434	84	0	0	84	D	489
Wild Horse	00613	C	1,522	573	128	0	0	128	D,S(p)	1,650
Wildlife	09999	--	0	0	4	0	0	4	D,E	4
Willow Spring	00612	I	304	0	?	0	0	0	D,E	304
Wood Hollow	01732	C	213	0	102	0	0	102	D,E,M	315
TOTALS:			110,126	23,058	33,179	3,023	581	36,783		146,909

Notes: Wildlife Key: D= Deer; E= Elk; B= Bison; A= Antelope; S= Bighorn Sheep; M= Moose; (i)= Infrequent or occur on only a small part within the allotment; (e)= Species occurs within the allotment but is targeted for elimination by UDWR; (p)= Potential for species within the allotment

Source: RFO Grazing Allotment Files; RFO Grazing Billing Database; Henry Mountain Grazing Final EIS; Mountain Valley Grazing Management Draft EIS; Parker Mountain Grazing Management Draft EIS; San Rafael EIS; UDWR

Range Management Practices

Land treatment and management facilities within the RFO are to provide additional livestock forage; make unusable areas usable by adding water and access; provide more uniform distribution of livestock; provide more intensive management, including rest periods for improved ecological status; and aid in control and handling of livestock. Range improvement projects have been funded and constructed by using one or a combination of the following resources: 1) entirely by the grazing permittee, 2) entirely by BLM, 3) with use of Grazing Advisory Board Funds, 4) by CCC, or 5) by Job Corps. Range improvements are managed through a three-category system: 1) areas where construction and maintenance of range improvements is allowed, 2) areas where range improvements are excluded, and 3) areas where construction and maintenance of range improvements require special conditions.

Livestock Grazing/Rangeland—Resource Condition

Range studies are completed annually to license the appropriate amount of forage so as not to overgraze the vegetation present. In addition, allotments are inventoried to determine whether they comply with the Standards for Rangeland Health. By regulation, if the condition of the range is not in proper functioning condition, action must be taken within 1 year to begin to rehabilitate or reverse the portion of the range that is not functioning.

Livestock—Vegetation Relationships

Vegetation is a basic component of the grazing. The four major vegetation zones used by livestock are pinyon/juniper, saltbush, grassland, and blackbrush. Additional concerns in the RFO include riparian areas, poisonous and noxious plants, and those areas defined as being ecologically unique.

Pinyon/juniper (Pinyon/juniper Pigmy Forest)

Little forage is produced in the pinyon/juniper zone for livestock. Tree roots deplete the soil of available moisture and nutrients. As a result, understory forage species are often scarce or altogether absent.

Saltbush

Generally, the saltbush zone produces a mixture of browse and grass species for livestock grazing. Species that are most common are four-wing saltbrush, shadscale, Mormon tea, galleta, blue gramma, and Indian ricegrass. Although most of these areas are accessible to livestock, its use is to some degree limited or precluded by the lack of stock water. Reservoirs are the main source of water but are often dry during the spring and winter months.

Blackbrush

These areas are support stands of forage species, such as Mormon tea, Indian ricegrass, and galleta, which are useful for livestock grazing in fall, spring, and winter. In general, cattle do not use blackbrush if other forage is available.

Cold Desert Shrub (sagebrush)

The sagebrush zone occurs on valley bottoms, plateaus, and benches. Annual precipitation ranges from 8 inches to 20 inches. Elevations range from 5,000 feet to 10,000 feet. This zone includes black sagebrush (*Artemesia nova*) communities on shallow, rocky soils, and subspecies of big sagebrush (*Artemesia tridentata*) on deeper, well drained soils. It often intermixes with saltbush communities at lower elevations and forms an understory within pinyon/juniper communities. Sagebrush communities provide important and crucial habitat for bison, elk, mule deer, pronghorn antelope, sage grouse, and numerous small game and nongame species. It furnishes forage for sheep and cattle. It also provides opportunities to increase forage production and vegetation diversity with rangeland treatments.

Riparian

Generally these areas are accessible to livestock and are heavily used because of their relatively lush vegetation, availability of water, and shade. Riparian areas constitute less than 1 percent of vegetation in the RFO.

Poisonous and Noxious Plants

Poisonous and undesired plants, including noxious and invasive plants, are present throughout the RFO, but generally do not occur in concentrations sufficient to pose a significant threat to livestock. For a more complete discussion of the vegetation resource, refer to the Vegetation Section of this document.

Ecologically Unique Areas

Isolated mesa tops are scattered throughout the RFO. Some of the isolated mesa tops are ecologically unique and could be considered relict areas because inaccessibility limits or prevents livestock and wildlife grazing. These areas are extremely limited in size, with a few having the potential to qualify as ACECs.

Water

Water for livestock is generally scarce over the entire area. Although there are numerous reservoirs, they are generally not very dependable. Most of the water supplied for these reservoirs comes as relatively unpredictable runoff in summer and fall. The soil is permeable, and water that collects is these reservoirs

often seeps out or has evaporated by the time livestock enter the area. Wells, pipelines, and springs are more reliable, but they are difficult or infeasible in many of the areas. Guzzlers are to some degree more successful than reservoirs because (1) they have a smaller area of water surface exposed to evaporation, (2) they can be more easily sealed with bentonite to prevent leakage, and (3) they often have a slick rock apron, which collects a large amount of runoff.

Forage Use

Although the active preference (the number of AUMs active for licensing) does not vary seasonally, the number of AUMs that BLM permits to be licensed does vary. Table 3.7-2 shows the annual fluctuations in licensed AUMs since 1988. The variations in licensed AUMs are connected to the seasonal variations in precipitation and temperature that result in a varying amount of forage available for licensing to livestock operators. Figure 3.7-1 shows the relationship of licensed AUMs to precipitation by superimposing AUMs licensed annually with the Palmer Drought Severity Index, operationally known as the Palmer Drought Index (PDI), drought classifications for the past 15 years. The PDI measures the duration and intensity of the long-term drought-inducing circulation patterns. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns plus the cumulative patterns of previous months. Because weather patterns can change almost literally overnight from a long-term drought pattern to a long-term wet pattern, the PDI can respond rapidly. However, in measuring long-term drought, the PDI uses soil moisture at a level that may not indicate local, well-timed precipitation events. Although an area may be in a severe drought, well-timed localized precipitation events may result in adequate forage for that growing season. As such, the drought classification index noted in Figure 3.7-1 may or may not appropriately represent forage conditions on a year-to-year basis.

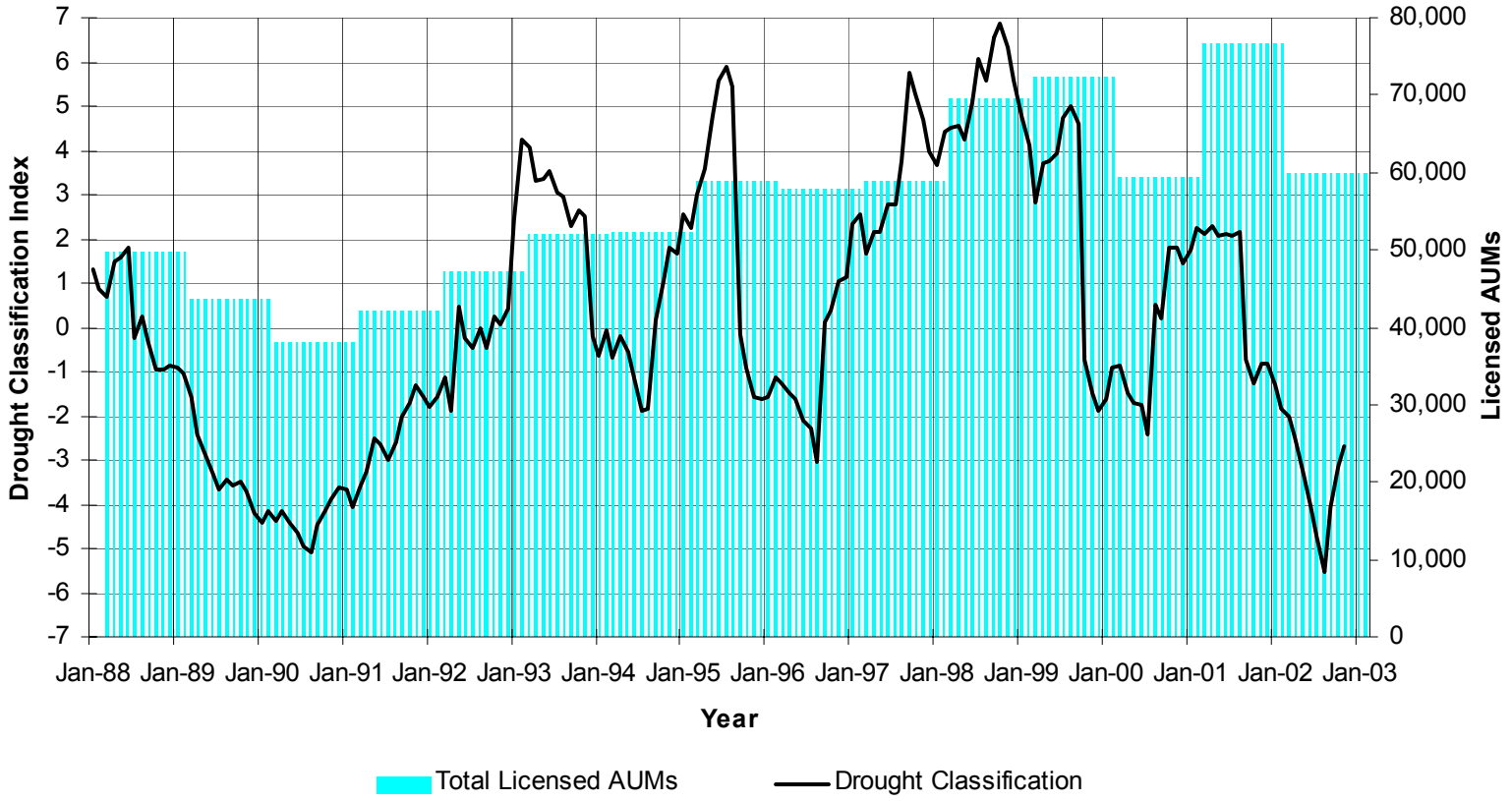
Table 3.7-2. Livestock Grazing Use - RFO[1]

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Grazing Permits[2]	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177
Total Livestock Operators	126	125	120	123	129	131	128	130	129	135	139	148	144	147	143
Cattle & Horse	101	103	97	98	104	106	108	109	111	116	118	113	127	132	130
Sheep & Goats	42	41	36	42	42	42	32	37	35	36	38	37	33	35	32
Active AUMs	104,184	104,184	104,184	104,184	104,184	104,184	104,184	104,184	104,184	104,184	104,184	104,184	104,184	104,184	104,184
Cattle & Horses	40,467	35,337	30,202	35,837	39,783	42,768	43,338	47,532	48,996	48,894	59,930	62,295	50,246	63,743	52,287
Sheep & Goats	9,426	8,282	7,793	6,423	7,478	9,393	8,913	11,514	8,788	10,051	9,664	10,062	9,160	12,848	7,647
Total Licensed AUMs[3]	49,893	43,619	37,995	42,260	47,261	52,161	52,251	59,046	57,784	58,945	69,594	72,357	59,406	76,591	59,934

Notes:
1 – Figures are by billing year (March 1 – February 28).
2 – Difference between total permits and operators denotes some operators with two permits.
3 – The difference between the Active AUMs and the licensed AUMs is attributable to a combination of a variety of variables. Seasonal changes in precipitation and temperature result in more or less forage available to license for livestock grazing. In addition, fluctuations in the beef or sheep markets can make grazing less profitable. Permittees may also take voluntary nonuse for a variety of reasons, resulting in AUMs that are available, but not licensed for livestock use. In addition, the licensed AUMs shown in the table totaled for the RFO. The above-mentioned impacts to licensed AUMs could be limited to specific allotments, or a number of allotments, on a rotating basis. The figures in the table should not be interpreted as the forage in each allotment in the RFO is being underutilized. The aforementioned circumstances, combined throughout the permittees, results in a consistently low licensing of active AUMs.

Sources: BLM RFO; BLM National Web Page

Figure 3.7-1
Licensed AUMs & Drought Classifications



Drought Index Classifications

4.0 or more extremely wet		-4.0 or less extreme drought
3.0 to 3.99 very wet		-3.0 to -3.99 severe drought
2.0 to 2.99 moderately wet	0.49 to -0.49 near normal	-2.0 to -2.99 moderate drought
1.0 to 1.99 slightly wet		-1.9 to -1.99 mild drought
0.5 to 0.99 incipient wet spell		-0.5 to -0.99 incipient dry spell

Livestock Grazing/Rangeland—Issues and Opportunities

The most significant issue for livestock grazing and rangelands in this planning process is the development and implementation of the Standards for Healthy Rangelands and Guidelines for Grazing (S&G) since the last LUPs were developed. This planning effort should incorporate the S&Gs and include wording that the standards apply to all resources and resource uses. Other issues identified through internal and public scoping include the following.

- Forage allocation, season-of-use, etc., should be updated to reflect changes in the grazing program. For example, livestock grazing has been relinquished in the Busenbark and Donkey Hill Allotments. Livestock grazing practices have changed in several allotments (Robbers Roost, for example) since the plans were completed. Several allotments have had changes in season-of-use, changes in class of livestock, and reductions in livestock numbers. Some allotments have been transferred to USFS administration. State in lieu selections have reduced the size of several allotments (M&O, Antelope Valley, Sanpitch, Sandledges, and Cedar Grove Allotments). There have been several amendments to the Henry Mountains MFP related to forage allocation changes in Bullfrog, Rockies, Pennell, Steel Butte, Robbers Roost, and Horseshoe South Allotments, which needs to be carried forward into the new plan. In short, the grazing program needs to be updated with any changes that have taken place related to forage allocation, season-of-use, and class of livestock. This should include updating allotment acreage changes from realty actions and disposal of state in lieu selections.
- Address the relinquishment of livestock grazing privileges and the request to reallocate to wildlife. To address this issue, new planning should provide guidance and authority to complete the reallocation of AUMs from livestock grazing to wildlife or other resources, where such actions are appropriate. If appropriate, the RMP should also provide for temporary livestock grazing on these allotments when deemed necessary for ecosystem health reasons such as hazardous fuel reduction, or to achieve desired future conditions for vegetation.
- Forage allocation should be addressed on allotments with no forage licensed for livestock use.
- Administrative access for maintaining range improvements should be acknowledged and maintained.
- Recreation activities and livestock use may conflict more in the future. This planning effort should mitigate the conflicts between recreation and livestock grazing where they exist.
- New projects related to riparian protection should be considered in these areas.

3.8 MINERALS

The minerals section addresses three general groups of mineral resources: coal and oil shale; fluid minerals (which includes oil and gas, coalbed methane, tar sands, and geothermal resources); locatable minerals; mineral materials; and nonenergy leasable minerals. Each group will be addressed separately in the existing management and existing environment sections. The final section, Issues and Opportunities, is not organized into these groups, but it addresses individual commodities concerning the reasonable, foreseeable development of each.

Minerals—Current Land Use Plan Direction

Forest MFP, 1977

- Make alternative coal areas available for lease as possible substitutes for higher priority EMARS nominations and for possible lease either after 1987 or as market demand dictates.
- Make all public lands in the unit available for oil and gas development to meet critical national energy needs.
- Make available for disposal sand and gravel to meet local and regional construction and maintenance needs.

Mountain Valley MFP, 1981

- Provide sources of sand and gravel and borrow material so that the needs of the public, requirements of the building construction industry, and demands for road construction and maintenance material can be met over the next 10 years.
- Provide a source of volcanic aggregate (Joe Lott Tuff) that will meet the needs of the building construction industry over the next 10 years.
- Maximize the potential of oil and gas production occurring within the planning unit by allowing continued leasing and exploration activities.
- Maximize the potential for utilization of the geothermal resource within the planning unit by allowing continued leasing and exploration activities.
- Allow for the continued exploration and development of the clay resource (bentonite and Fuller's Earth) on public lands within the planning unit.
- Allow for the continued exploration, location, and development of the gypsum resource from the Federal mineral estate and the public lands within the planning unit.
- Allow for the continued exploration, location, and development of the uranium resource on public lands within the planning area.
- Allow for the continued exploration, location, and development of the welded tuff (Azomite) resource on the public mineral estate in T16 and 17S, R1W.
- Allow for the continued exploration and development of the alunite resource on public lands within the planning unit.
- Provide a source of topsoil material for the public.

Henry Mountains MFP, 1982

- Identify those Federal coal lands within the Henry Mountains coalfield that are acceptable for future coal development.
- Where possible, maximize the potential of oil and gas production within the planning area by allowing continued leasing and exploration activities.
- Identify those Federal lands in and adjacent to the Tar Sand Triangle Designated Tar Sand Area that will be made available for the leasing, exploration, and development of the underlying tar sand resource.

- Provide sources of sand and gravel and borrow material so that the needs of the public, requirements of the building construction industry, and demands for road construction and maintenance material can be met over the next 10 years.
- Allow for the continued exploration and development of the uranium resource on public lands within the planning area.
- Allow for the continued exploration and development of the gold, silver, and copper resources on public lands within the planning area.
- Allow for the continued exploration and possible development of the gypsum and clay resources on public lands within the planning unit.

Parker Mountain MFP, 1983

- Provide sources of sand and gravel so that the needs of the public, requirements of the building construction industry, and demands for road construction and maintenance material can be met over the next 10 years.
- Provide a source of flagstone from public lands within the planning unit so that the needs of the general public and requirements of the building construction industry can be met over the next 10 years.
- Maximize the potential for oil and gas production occurring within the planning unit by allowing continued leasing and exploration activities.
- Allow for the continued exploration, location, and development of the gypsum resource on public lands within the planning unit.
- Allow for the continued exploration, location, and development of the copper resource on public lands within the planning unit.
- Allow for the continued exploration, location, and development of the uranium resource on public lands within the planning unit.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Provide maximum leasing opportunity for oil, gas, and geothermal exploration and development by using the least restrictive leasing categories necessary to adequately protect the sensitive resources.
- Make all lands available for further coal leasing consideration as determined by the coal lease screening process, which involves (1) call for coal resource information; (2) application of the coal unsuitability criteria; (3) multiple land-use analysis (consideration of locally important or unique resource values); and (4) surface owner consultation.
- Continue to meet public demand for salable and free-use mineral materials on a case-by-case basis.
- Prevent unnecessary and undue degradation on lands open for locatable mineral exploration and development.

Minerals—Existing Management

The following section identifies the existing management of minerals. Regardless of the designations stated below, some lands in the RFO are subject to some additional consideration related to Threatened, Endangered, or sensitive status species or other wildlife habitat such as bison range, especially if listing of a Threatened or Endangered species occurred since the latest LUPs were finalized. Proposals in such areas are held in suspension until an appropriate NEPA process (except for 3809 notices) can be completed relative to the impacts of that proposal on the resource or area of concern.

Coal and Oil Shale

Three Known Recoverable Coal Resource Areas (KRCRA) are contained wholly or partially within the RFO: 1) Emery KRCRA; 2) Wasatch Plateau KRCRA; and 3) Henry Mountain KRCRA. Two Coal Unsuitability Studies have been completed to identify the coal resources suitable for recovery.

The FPU Coal Unsuitability Study, completed in October 1980, addresses the portions of the Emery and Wasatch KRCRAs contained in the RFO. The multiple use recommendation, accepted in the FPU MFP, states that "All Federal coal areas within the Wasatch Plateau and Emery KRCRAs are determined to be acceptable for future coal lease consideration. However, some of these areas will require protective stipulations." Stipulations contained in the FPU Coal Unsuitability Study are shown in the following list. For locations and specific resources being protected by these stipulations, consult the FPU Coal Unsuitability Study, pages 5 through 17.

- No surface disturbance
- No surface occupancy (NSO)
- No industrial fires
- No subsistence
- No roads, dwellings, and/or facilities
- No surface disturbance seasonally
- No portals.

The Henry Mountain Coal Unsuitability Report, dated February 1982, addresses a coal study area of 143,800 acres that includes private, state, and public lands. Within the study area, 127,189 acres of public and private land are identified where the Federal Government has retained the mineral estate. Following 43 CFR 3400 regulations, the unsuitability criteria were applied to determine areas of surface-recoverable coal suitable for surface mining. Through this process, areas of surface-recoverable coal are separated into two groups: those suitable for surface mining and those unsuitable for surface mining. Table 3.8-1 shows the results of the Henry Mountain Coal Unsuitability Report.

Table 3.8-1. Henry Mountain Coal Unsuitability Report Summary

	Acreage[1]
Study area lands with Federal mineral estate	**127,189**
Federal mineral estate lands available for underground mining	82,488
Federal mineral estate lands available for surface mining	44,701
Federal mineral estate lands ***suitable*** for surface mining	25,446
Federal mineral estate lands ***unsuitable*** for surface mining	19,255

Notes:
1) Unsuitability criteria were applied only to public lands and those lands in the coal study area where the Federal Government has retained the mineral estate and where surface-recoverable coal is present.

Source: Henry Mountain Coal Unsuitability Report, 1982

Although surface mining is not available throughout the coal study area, some areas are available for underground coal mining. Unsuitability criteria are not applied to these areas, although stipulations similar to those identified above, from the FPU Coal Unsuitability Study, are applied to areas in the study area where underground coal mining is allowed. For specific locations and resources being protected by these stipulations, consult the Henry Mountain Coal Unsuitability Report.

Requested coal leases in areas not considered in these unsuitability studies are managed as follows.

- Call for coal resource information
- Application of the coal unsuitability criteria

- Multiple land-use analysis (consideration of locally important or unique resource values)
- Surface owner consultation.

Oil shale deposits, located on the Gunnison Plateau, on the east flank of the Valley Mountains, and on the west flank of the Wasatch Plateau, are withdrawn from leasing as a result of Executive Order 5327 and subsequently Public Law 45-22. These temporarily withdrew oil shale lands from leasing for the purpose of investigation, examination, and classification. Subsequent Executive orders permitted oil and gas leases on oil shale lands, and Executive Order 10355 authorized the Secretary of the Interior to rescind the withdrawal order (Congress, 1980). None have done so for these oil shale deposits. As these deposits are currently withdrawn from leasing, the applicable LUP does not address management of oil shale.

Fluid Minerals (Oil and Gas, Tar Sands, Geothermal Resources, and Coalbed Methane)

As described in BLM Manual 1624, Federal oil and gas resources (including coalbed methane) fall into one of four categories that become increasingly restrictive.

- **Open Subject to Standard Lease Terms and Conditions**: These are areas where it has been determined through the planning process that the standard terms and conditions of the lease form are sufficient to protect other land uses or resource values.
- **Open Subject to Seasonal or Other Minor Constraints**: These are areas where it has been determined that moderately restrictive lease stipulations may be required to mitigate impacts to other land uses or resource values. Category 2 leases frequently involve timing limitations such as restricting construction activities in designated big game crucial habitats, or controlled surface use stipulations such as creating a buffer zone around a critical resource.
- **Open Subject to NSO or Other Major Constraint**: These are areas where it has been determined through the planning process that highly restrictive lease stipulations are necessary to protect resources. Category 3 leases may prohibit the construction of well production and support facilities. These areas can be subject to directional drilling, if technologically and economically feasible.
- **Closed to Leasing:** These are areas where it has been determined that other land uses or resource values cannot be adequately protected, and appropriate protection can be ensured only by closing the land to leasing through either statutory or administrative requirements.

Lands within the RFO that are covered by each of the four oil and gas leasing categories are shown on Map 21, with acreages for each category shown in Table 3.8-2. As shown on Map 21, most of the Category 4 oil and gas areas in the RFO are located in the Little Rockies WSA in southeast Garfield County. Special lease stipulations for a given area are determined through the RMP/EIS process by land management agencies such as BLM. Regardless of the current leasing category identified in the existing LUPs, no new leases are offered in WSAs.

Table 3.8-2. Federal Oil and Gas Leasing Categories

Leasing Category	Acreage
Category 1	1,473,200
Category 2	569,800
Category 3	32,300
Category 4	58,200

Source: Bureau of Land Management; RFO

The stipulations associated with the areas designated as Category 2 and 3 are identified in the Oil and Gas Leasing Implementation EA for Henry Mountain Resource Area and SRRA. The stipulations are listed below. To identify which areas these stipulations apply, consult the above mentioned EA.

- No drilling on slopes in excess of 50 percent or 22.5 degrees.
- NSO. (Note: In the Henry Mountains MFP NSO is included as a special stipulation under oil and gas leasing Category 2, with the potential for an exemption to be approved before development. In the Parker Mountain and Mountain Valley MFPs, NSO is used as an oil and gas leasing Category 3 restriction.)
- No drilling during muddy and/or wet periods.
- No drilling or storage facilities will be allowed within 1,320 feet (or ¼mile) of the roadway centerline unless the activity is not visible.
- No energy exploration normally between 12/1 and 6/15 on bison year long range (Henry Mountain area).
- No energy exploration normally between 12/1 and 4/15 on bison winter range (Henry Mountain area).
- No energy exploration normally between 11/1 and 5/15 on deer winter range (Henry Mountain area).
- No drilling or storage facilities will be allowed within inner-canyon walls (Dirty Devil River canyons).
- No energy exploration, etc., between 12/1 and 4/30 on raptor habitat during critical wintering season (Big Hollow Raptor Study Area).
- No drilling activity between 4/1 and 6/15 in grouse nesting areas (Parker Mountain area).
- No drilling activity between 12/1 and 4/30 in antelope wintering and kidding area (Parker Mountain area).
- No drilling activity between 3/16 and 6/15 in sage grouse strutting areas (Parker Mountain area).
- No energy exploration or drilling activities between 12/1 and 5/31 on crucial deer winter range (Parker Mountain area).
- No energy exploration or drilling activities between 12/15 and 5/15 on crucial deer winter range in the old SRRA.

Seismic surveys are a critical part of oil and gas exploration and are authorized on BLM managed land by approval of Notices of Intent (NOI) to Conduct Geophysical Operations or sundry notices. Three NOIs have been approved in the RFO since 1990. Geophysical operations are subject to the category designations. The RFO is open to geothermal leasing on a case-by-case basis using the oil and gas category designations.

Combined Hydrocarbon Leasing (CHL) applies only to the designated Special Tar Sand Areas (STSA), (i.e., Tar Sand Triangle). In other areas not designated as an STSA, an oil and gas lease includes tar sands.

Locatable Minerals, Mineral Materials, and Nonenergy Leasable Minerals

Except for 40 acres at the Henry Mountains Administrative site (withdrawn from mineral entry), the RFO is open to locatable mineral development, although unnecessary and undue degradation on lands during exploration and development is prevented. Locatable mineral mining claims can be located within existing WSAs as long as the land is not withdrawn for some other reason, although activity exceeding casual use is not allowed.

The RFO is open to mineral material development, though there are areas of emphasis identified in the existing LUPs. Each new mineral materials operation is subject to a site-specific NEPA analysis.

Mineral material disposal regulations allow that persons may collect limited quantities of petrified wood (up to 25 pounds plus one piece per day with a yearly limit of 250 pounds) for noncommercial purposes (i.e., personal use) under the terms and conditions consistent with the preservation of significant deposits as a public recreational resource (43 CFR 3620). As such, petrified wood is not only a salable mineral, but also a paleontological resource, and may be subject to additional protective measures, the conditions of which may be specified in the RMP. Similarly, private individuals may take small amounts of rocks and minerals from unrestricted Federal lands without obtaining a permit if collection is for casual use and personal, noncommercial purposes.

There are no restrictions in existing management on nonenergy leasable minerals.

Minerals—Resource Condition

Presently, exploration and development of mineral resources are at historically low levels. The major mineral development in the RFO is in Eastern Sevier County with the SUFCO mine, where coal is mined from BLM and National Forest Lands. Recent changes in oil and gas markets have driven the demand for these products up. As a result, the demand for new leases, especially outside traditional areas of development, has increased. A new producing well on private land is adding to the potential for future market trends to increase the demand for exploration. Sand and gravel and building stone are the two prominent saleable minerals under development. County and state road departments are the most significant users of the gravel resources. The Mineral Potential Report outlines each mineral resource and the likelihood for occurrence and the development of these resources based on current market conditions, resource demands, remoteness and accessibility to the resource. Refer to the Mineral Potential Report for this detailed information.

Coal and Oil Shale

There are (as of April 2003) seven coal leases in the RFO. Five leases are contained wholly on USFS managed land (three on the Fishlake National Forest and two on the Manti-LaSal National Forest), whereas two overlap USFS and BLM managed land. These leases are represented on Map 23. In addition to the authorized leases, there is one coal lease from 1998 and one coal exploration license from 2002 pending on the Manti-LaSal National Forest. Within these leases, the SUFCO coal mine produces more coal than any other coal mine in Utah. Production figures from Sevier County (the only county with coal production in the RFO) are contained in Table 3.10-14.

As a result of existing withdrawals in areas containing oil shale, there are no leases or development of oil shale in the RFO.

Fluid Minerals (Oil and Gas, Tar Sands, Geothermal Resources, and Coalbed Methane)

As of April 2003, there are 94 oil and gas leases in the RFO (Map 22), with one lease in Capitol Reef National Park that is under a suspension of operations dated to 1969. In addition to the authorized leases,

14 leases are pending authorization. Of the pending leases, three are pending either a congressional decision on existing WSAs or an application withdrawal by the applicant, six are pending plan and NEPA updates on the Fishlake and Dixie National Forests, and five leases are pending appeals. As noted above, recent changes in the oil and gas market have sparked a heightened interest in new leases in the RFO. Recent lease sales have identified more potential areas within the RFO than the several preceding years.

Seismic surveys are a critical part of oil and gas exploration and are authorized on BLM managed land by approval of NOIs to Conduct Geophysical Operations. Three NOIs have been approved in the RFO since 1990. In addition to the above-mentioned 94 leases, there are 72 authorized oil and gas leases under suspension of operations because of the filing of an NOI to convert them to CHLs under the Combined Hydrocarbon Lease Act of 1981. Seventeen of these leases have no time left on the primary term of the oil and gas lease and will expire if the conversion is rejected. Oil shale is specifically excluded from combined hydrocarbon leases (along with coal and gilsonite). The RFO is open to geothermal leasing, though oil and gas leasing categories may apply to geothermal leases. There has been little interest, to date, in new geothermal leases.

Locatable Minerals, Mineral Materials, and Nonenergy Leasable Minerals

As of April 11, 2003, there were 1,337 active mining claims in Sanpete, Sevier, Piute, Wayne, and the eastern portion of Garfield counties. Of these, 510 are located partially or wholly on BLM-administered lands. In addition, there are (as of April 1, 2003) 28 Mining Law Notices in the RFO (Map 26). Only one is operating under a plan of operation, although that one operation is pending reclamation.

There are 34 open community pits in the RFO that provide commodities such as sand, gravel, sand and gravel shale, stone, topsoil, and fill/borrow material (Map 27). Ten exclusive sale sites provide riprap, sand, gravel, oyster shell, humate, and dimension stone. There are also 20 exclusive free use sites in the RFO that provide gravel, sand, and fill and borrow material. Most of these mineral material sites are for the disposal of gravel material. The mineral materials information is current as of April 1, 2003.

There is one nonenergy solid mineral lease located on the Fishlake National Forest. This lease was a State lease on State land that was exchanged between the Federal Government and the State of Utah. The state lease for clay has been converted to a Federal lease for clay. Clay is not normally a leasable but a salable mineral; however, because of the exchange, the State lease was converted to a Federal lease.

Minerals—Issues and Opportunities

The main issues regarding minerals management in the RFO include keeping lands available for exploration and development, and balancing these needs with other resource consideration, specifically the wilderness-related issues and protection of Threatened and Endangered species and their habitat. Given BLM's multiple use mandate, it is critical to consider the range of uses of public lands in addressing mineral exploration and extraction. In the western part of the RFO, mineral development has limited conflicts with other uses of public lands. In the eastern portion of the RFO, there are more concerns with special management designations such as WSAs, bison habitat, ACECs, and recreation use.

The RMP should address a balance between development of the mineral resources of the area and sustainable ecosystem management. Included in this effort will be lease and permit administration plans as well as careful consideration of necessary mitigation and remediation requirements. Some of the issues associated with mineral resource management include access, WSA, recreation, ACEC, wildlife, and visual resources management (VRM). The possible conflict between mineral exploration and development with other resources and uses indicates a need for researched, carefully considered alternatives and decisions.

Several management issues need to be addressed in the development of this RMP and associated EIS:

- There is a need to address some inconsistencies with oil and gas status in relation to other resource management. For example, areas are currently closed to drilling during certain sensitive times for mule deer, but kept open for OHV use.
- Eliminating inconsistencies would also apply to VRM, such as to surface occupancy in Category 1, but OHV use is allowed in those areas. The plan should delineate where the NSO areas are (cross-reference with the VRM discussion) and how they need to fit together (any mineral exploration development).
- Production of stone products under the mining laws that may be common varieties of minerals, but should be disposed of under the Materials Act.
- Some community pits in the RFO do not have adequate reclamation plans.
- Salable mineral development has not been properly addressed in previous plans. The MFP addressed only sand and gravel and borrow material, and it listed specific areas from which to obtain these materials. All salable minerals need to be addressed, including riprap, clay, oyster shell, and humates. Mineral materials need to be considered for disposal on a case-by-case situation analysis throughout the RFO. The plan should include disposal criteria instead of site-specific prescriptions.

Further information on the occurrence and development potentials for minerals in the RFO can be obtained in the Mineral Potential Report and Coal Resource Evaluation Report. See these reports for mineral specific occurrence and potential.

3.9 RECREATION

Recreational use of the RFO has increased dramatically since adoption of the current LUPs. Changes in the amount and type of recreational use in the RFO indicate a need for improved planning consideration of the requirements and impacts of recreational users. In addition, areas adjacent to the RFO have seen an increase in recreation. This planning process will need to account for an increase in recreation use while remaining flexible enough to adapt to any new forms of recreation.

It should be noted that previous plans have referred to off-road vehicles (ORV), all terrain vehicles (ATV), motorcycles, snowmobiles, etc., as off-highway vehicles (OHV). For consistency's sake, this section of the MSA will refer to motorized vehicles as OHVs, as defined in the National OHV Strategy.

Recreation—Current Land Use Plan Direction

Forest MFP, 1977

- Provide hunting opportunities to sustain 3,887 quality hunting days by 1980 and to sustain 4,618 quality hunting days by 1990.
- Provide for extra protection and preservation of archeological sites in the Trough Hollow Area.
- Provide ORV opportunities to sustain at least 50 specific ORV visitor use days by 1990, as well as sustain all ORV use associated with other activities, such as hunting and sightseeing.

Mountain Valley MFP, 1981

- Manage public lands for ORV use to (1) provide 10,000 acres and 3,000 visitor days at high ORV use sites, including Richfield, Salina, Gunnison, Indian Creek, and Sand Ledges, to meet user needs for the next 5 years, and (2) provide 450,000 acres of BLM land for dispersed and incidental ORV use throughout the planning area for the next 5 years.

Henry Mountains MFP, 1982

- Provide recreational facilities where needed.
- Develop a management policy for existing recreation sites and determine the level of development needed to provide for visitor health and safety.
- Designate ORV use categories for all public lands in the Henry Mountains Planning Area.
- Provide opportunities for rock hounding and collection of the semiprecious gemstone material that occurs within the planning area.
- Determine the most appropriate method for managing mineral activities on developed and undeveloped recreation sites.

Parker Mountain MFP, 1983

- Provide public lands in the planning unit for OHV use.
- Maintain the Freemont River Gorge in its existing primitive state and protect the area from surface disturbance.
- Provide facilities to accommodate 200–300 visitor days per year for fishing and picnicking at Mill Meadow Reservoir and the 1-mile section of the Freemont River immediately below Mill Meadow Reservoir.
- Improve hiking through Sulphur Creek Canyon to increase public usage to 150–200 visits per year.
- Provide public access to Fish Creek Cove archeological site to accommodate 200–300 visits per year.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Provide recreation opportunities under BLM's basic stewardship responsibilities for unstructured, extensive types of recreation uses, maximizing the visitor's freedom of choice. Continue to maintain important recreational values in Federal ownership to ensure this continued diversity of recreational opportunities.

Recreation—Existing Management

The primary goal of recreation management in the RFO is to provide a diversity of recreation opportunities while protecting natural resources. Recreation is a growing use of the RFO. Increasing numbers of recreation visitor days require increased planning and management. Visitor needs and conflicts draw on already limited personnel and resources. The management of recreation is generally guided by Utah Standards for Public Land Health and Guidelines for Recreation Management. The guidelines broadly describe the procedures that should be applied to achieve standards for rangeland health within the recreation program.

Consistent with existing policies, guidance, and budgetary constraints, the standards recommend that BLM do the following in managing recreation:

- Recognize that, in some cases, various levels of regulations and limits on users are necessary. Restrictions and limitations on public uses should be minimal without compromising the primary goal.
- Use on-the-ground presence as a tool to protect public lands.
- Where long-term damage by recreational uses is observed or anticipated, limit or control activities through specialized management tools, such as designated campsites, permits, area closures, and limitations on the number of users and duration of use. Revise recreation management plans and MFPs when they prove to be either overly restrictive or inadequate to maintain public land health.
- Coordinate with Federal and state agencies, county and local governments, and tribal nations in recreation planning and in managing traffic, search and rescue operations, trash control and removal, and public safety.
- Consider and, where appropriate, implement management methods to protect the resource and maintain the quality of experience for the various user groups. Management methods could include limitation of numbers, types, timing, and duration of uses.
- Encourage the location of public land recreational activities near population centers and highway corridors by placement of appropriate visitor use infrastructure. Provide restrooms and other facilities adequate for anticipated uses at designated campgrounds, trail heads, and other areas where there is a concentration of recreational users.

Recreation Opportunity Spectrum Designations

None of the six existing MFPs or RMPs within the RFO addresses Recreation Opportunity Spectrum (ROS) classification. The ROS is a system of inventorying and classifying the range of recreational experiences, opportunities, and settings available on public lands. Nationally, BLM primarily manages for five of the six ROS classes, including primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, and rural. The urban ROS classification does not typically require BLM management restrictions. Roaded natural and rural ROS classes also require very few BLM restrictions.

The primitive, semiprimitive, and roaded natural classifications are designed to provide certain types of recreation settings and may require restrictions on use to meet management objectives.

Recreation Management Areas

Recreation Management Areas (RMA) are BLM's primary means of managing recreational use of the public lands. Public land falls within either a Special RMA (SRMA) or Extensive RMA (ERMA). Table 3.9-1 lists the RMAs in the RFO and their associated OHV designations.

Table 3.9-1. RMAs and OHV Designations

RMA	Type	Total Acres Within RFO	OHV—Open (acres)	OHV—Closed (acres)	OHV—Limited (acres)
Henry Mountains	Extensive	1,601,467	1,106,270	216,158	279,039
Sevier River	Extensive	499,972	All	–	–
Cedar-Beaver-Garfield-Antimony	Extensive	38,900	34,400	–	4,700
Forest	Extensive	75,000	71,047	4,553 (Trough Hollow)	Seasonal Closure for wildlife concerns

Note: Acreages in this table are based on totals found in the BLM Recreation Management Information System (RMIS).

Special Recreation Management Areas

SRMAs are areas that require a recreation investment, where more intensive recreation management is needed, and where recreation is a principal management objective. These areas often have high levels of recreation activity and valuable natural resources. There is currently one designated SRMA in the RFO. The Otter Creek SRMA is within the Mountain Valley portion of the RFO, adjacent to the Sevier River ERMA. Some other areas of the RFO may need to be considered for SRMA designation to protect resources and manage increasing levels of recreational activity.

Extensive Recreation Management Areas

ERMAs constitute the remainder of the RFO outside of SRMAs and other special designation areas. ERMAs are areas where recreation is nonspecialized, dispersed, and does not require intensive management. Recreation may not be the primary management objective in these areas, and recreational activities in the areas are subject to few restrictions. Most lands within the RFO currently fall within one of several ERMAs designated in existing LUPs.

- The Henry Mountains Resource Area MFP provides management direction for the Henry Mountains ERMA. The entire Henry Mountains ERMA is within the RFO and is managed by the RFO through the Henry Mountains Field Station.
- The Sevier River ERMA, which is entirely within the RFO, is managed according to the Mountain Valley Resource Area MFP.
- Portions of the Cedar-Beaver-Garfield-Antimony area fall within the RFO and are managed as an ERMA according to the Cleveland Beaver Garfield Antimony RMP.
- Although the Forest MFP does not identify ERMAs or SRMAs, portions of this planning area now fall within the RFO and are managed as an ERMA.

National Natural Landmarks

The Little Rockies National Natural Landmark (NNL) (Map 4), located in the Henry Mountains portion of the RFO, was established in 1975 in recognition of its nationally significant geology. BLM has the responsibility to preserve the values for which this area was established. The Secretary of the Interior designates NNLs; however, NNL regulations provide very little formal land use management guidance. Maintenance of the area's natural integrity is the primary tenet of the designation.

Portions of the Little Rockies area also became a WSA after its designation as an NNL.

Special Recreation Permitting

As authorized by the Land and Water Conservation Fund Act, there are five types of uses for which special recreation permits (SRP) are required: commercial, competitive, vending, individual or group use in special areas, and organized group activity and event use.

BLM issues SRPs for noncommercial use in certain "special areas," including long-term visitor areas, and wilderness, river use, and backcountry hiking or camping areas. The RFO issues noncommercial recreation use permits (RUP) for individual use of three fee-site campgrounds. BLM issues SRPs for activities such as large noncommercial group activities. The RFO issued 250 RUPs during FY02.

Commercial SRPs are issued to outfitters, guides, vendors, and commercial competitive event organizers that provide recreational opportunities or services without employing permanent facilities. SRPs for competitive and organized group events are also included in this category. SRPs may be issued for 5 years or less, with annual renewal, after which time outfitters must reapply for permits. The permits are issued as a means of managing visitor use, protecting natural and cultural resources, and providing a mechanism for accommodating commercial recreational uses. The RFO issued 21 SRPs during FY02. The total number of participants under SRPs during 2002 was 18,621. BLM revenues from SRPs, including RUPs, in the RFO totaled approximately $207,000 for this year.

Recreational OHV Use

Management of OHVs is regulated by BLM's off-road regulations, which are found in 43 CFR 8340 and BLM Manual 8340. The management of OHVs is also guided by the National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands. RMP also define the management of OHVs through travel management plans that designate roads and trails according to BLM regulations.

Map 5 shows the OHV use designations for the entire RFO. Four ORV implementation plans and an existing MFP are used to manage OHV use in the RFO:

Parker Mountain Off-Road Vehicle Implementation Plan

- This plan designates 154,824 acres of the area as open and 58,233 acres as closed. There are no limited designations within the Parker Mountain area. Additional management direction for OHV use in the Parker Mountain area is contained in the Parker Mountain MFP.

Henry Mountains Off-Road Vehicle Implementation Plan

- This plan designates 942,926 acres as open, 312,639 acres as limited, and 157,925 as closed.

Mountain Valley Off-Road Vehicle Implementation Plan

- This plan designates the entire planning area (499,972 acres) as open.

Beaver River (Garfield and Antimony Units) Off-Road Vehicle Designations and Implementation Plan

- The RFO portion of the Beaver River Planning Area has 34,400 acres designated as open and 4,700 acres designated as limited.

FPU MFP

- The FPU MFP designates all but one area in the FPU as open to OHV use. The Trough Hollow area (4,553 acres) is closed to OHVs. Seasonal restrictions are specified for critical winter habitat for wildlife.

Paiute ATV and Great Western Trail Systems

- The Paiute ATV and Great Western Trail systems are managed under an MOU among BLM, the USFS, the State of Utah, and local governments.

Recreation—Resource Condition

The recreational resources of the RFO represent some of the most unusual and least exploited recreation opportunities in the region. Portions of the RFO offer recreation opportunities not available in other parts of southern Utah or the Southwest. Recreation activity in the area takes place both at developed facilities and in undeveloped parts of the RFO. Both front country and dispersed recreation are popular in the RFO. In certain parts of the field office, increased visitor use is affecting soil, water, vegetation, and wildlife. Conflicts between recreationists are also beginning to increase in number. In some areas, recreation is in conflict with other resources and uses, such as wildlife habitat needs and wilderness.

Recreation Visitation

BLM recreation visitation is estimated by the Recreation Management Information System (RMIS). RMIS estimates recreation participation in 65 types of recreation activities recorded at BLM sites and areas, based on registrations, permit records, observations, and professional judgment. Visitation is estimated by numbers of participants as well as visitor days. Participants are the actual number of people who take part in a recreational activity. A visitor day is a common recreation unit of measure used among Federal agencies. One visitor day represents an aggregate of 12 visitor hours at a site or area.

Table 3.9-2 displays the RMIS figures for the RFO for the 1999, 2000, 2001, and 2002 fiscal years. More accurate figures for OHV use on the Paiute ATV and Great Western Trails are found in the Recreational Off-Highway Vehicle Use section below.

Table 3.9-2. Recreation Visitation—Richfield Field Office

Activity	Oct. 1998–Sept. 1999		Oct. 1999–Sept. 2000		Oct. 2000–Sept. 2001		Oct. 2001–Sept. 2002	
	Participants	Visitor Days[1]	Participants	Visitor Days[1]	Participants	Visitor Days[1]	Participants	Visitor Days[1]
Backpacking	46,481	231,035	52,452	262,514	72,368	74,079	54,754	56,338
Camping	64,026	64,707	71,088	70,957	128,418	125,787	98,951	96,285
Climbing (Mountain/Rock)	1,665	439	1,894	473	2,122	583	1,514	414
Driving for Pleasure	132,377	47,265	148,694	53,496	156,429	73,151	129,200	55,149
Environmental Education	420	247	210	107	2,320	800	1,769	639
Fishing (Freshwater)	16,915	3,406	23,705	5,097	26,815	5,890	28,075	6,215
Gather Non-Comm. Prod.	4,935	1,234	4,975	1,244	4,885	1,221	4,825	1,206
Hiking/Walking/Running	27,590	4,103	24,192	4,025	80,699	42,967	62,744	31,152
Horseback Riding	5,225	1,578	5,173	1,472	4,905	1,026	4,825	1,005
Hunting—Big Game	17,977	42,528	21,398	48,876	22,364	15,878	18,684	12,240
Hunting—Small Game	9,870	2,056	9,950	2,073	9,770	2,035	9,650	2,010
Hunting—Waterfowl	410	68	800	133	990	165	1,055	176
OHV (ATV)	20,524	3,614	25,893	4,465	75,751	29,652	60,945	22,254
OHV (Cars/Trucks/SUVs)	19,882	17,464	20,733	19,696	76,600	43,785	58,804	31,954
Pack Trips	1,677	2,294	1,913	2,605	2,076	2,078	1,478	1,476
Picnicking	41,170	3,914	43,557	4,103	112,439	9,811	81,422	7,213
Power Boating	6,270	1,045	7,580	1,263	8,110	1,352	8,290	1,382
Rockhound/Mineral Coll.	3,308	827	3,787	947	4,128	1,032	2,951	738
Row/Float/Raft	1,654	13,231	1,894	15,149	2,064	2,069	1,476	1,476
Snow Play (General)	4,935	823	995	166	977	81	965	80
Swimming/Water Play	6,690	969	8,400	700	9,125	760	9,360	780
Target Practice	9,870	823	9,950	829	9,770	814	9,650	804
Viewing (Wildlife)	39,062	6,014	44,173	6,840	46,832	7,356	41,131	5,897
Viewing (All Other)	16,861	1,351	15,691	1,306	16,228	1,373	14,732	1,203
Other	-	-	100	83	117	141	104	106
Total	499,794	451,035	549,197	508,619	876,302	443,886	707,354	338,192

Note: Because recreation estimates before FY01 were believed to be inaccurate, the RMIS estimation methodology was improved for FY01, resulting in significantly lower *visitor day* estimates for the RFO in 2001. Therefore, large declines in visitor day estimates between 2000 and 2001 should not be attributed to an actual decrease in visits, but rather to a change in estimation methodology. Similarly, the large increase in participants in 2001 should be attributed to the change in data collection and estimation.
1 – A recreation visitor day is equivalent to 12 hours of participation in a given recreational activity.
Source: Bureau of Land Management, Recreation Management Information System

During the past several years, a handful of activities made substantial contributions to total visitation (i.e., total visitor days) to the RFO. Camping, driving for pleasure, and backpacking[1] were the most common forms of recreation. Aggregate OHV use (use attributed both to ATVs and to cars, trucks, and OHVs) is another common form of recreation. Picnicking, hiking, and viewing wildlife are also common recreation activities as are fishing and big-game hunting.

Recreation visitation data can be particularly difficult to collect because of the dispersed nature of recreational activities. Improved information on the actual amount and concentration areas of recreational use would improve management and decrease potential for visitor conflict. The existing system of recreation visit data collection, RMIS, does not adequately describe the types or amounts of recreational use occurring in the RFO area. Overall, the primary difficulty with the RMIS data collection system is the lack of actual data collection in most parts of the RFO. Additional staff time and new recreation data collection techniques should be considered to improve the estimates produced. More accurate and recent data are available for several specific sites or uses, such as on the Paiute ATV and Great Western Trails.

The need for improved recreation visitation information is driven by several factors. First, overall interest in outdoor recreation has seen significant growth since the implementation of the existing management framework and the RMPs now in effect within the RFO. Second, Utah's population continues to look for places to recreate in remote, uncrowded, and pristine settings. Third, the technologies available for pursuing recreation in harsh environments have improved dramatically. These three factors have combined to produce increased visitation to southern Utah and the RFO. Increasingly, visitors from Utah's Wasatch Front are recreating in the area, making the RFO a popular weekend destination. The population base, geographic location, and recreation resources within the RFO are different from those of other regional BLM field offices, but the potential for increased recreational use and conflicts remains. Recreation management and planning should anticipate these patterns and develop on-the-ground means of protecting resources and enhancing visitation. Some techniques are currently being implemented for collecting data on the Paiute ATV and Great Western Trails, as discussed in the Recreational Off-Highway Vehicle Use section below. This may be used as a possible model for future monitoring techniques.

Recreation Opportunity Spectrum Designations

ROS classes have not been defined for any portion of the RFO. ROS classes could be particularly useful in providing areas for compatible types of recreational uses. The appropriate application of ROS concepts and classifications tends to reduce visitor conflict, protect natural and cultural resources, and support management objectives. ROS classes could also be used to provide defined visitor experiences. Recreational use of the RFO has increased and diversified since the implementation of current LUPs.

Recreation Management Areas

As described in the Existing Management subsection, RMAs are BLM's primary method of managing recreation uses in the RFO. The two types of RMAs serve to separate different types of use by location and protect resources of special interest or value. The existing RMAs do not have associated ROS designations. ROS and RMA designations may need to be considered together and used to create more understandable and effective recreation management zones.

Special Recreation Management Areas

SRMAs may need to be implemented to protect resources from the impacts of recreation visitors and to improve opportunities for a number of recreational activities. SRMA designation could be a particularly

[1] Backpacking use numbers include SRMAs throughout the area. These permits commonly reflect wilderness youth camps, and survival and treatment programs.

useful tool for improving data on the levels of visitation to those portions of the RFO where increasing levels of recreation have been occurring.

Extensive Recreation Management Areas

The existing ERMAs were designated primarily because there was no need for more intensive recreation management; however, recreation use of the RFO has increased dramatically since the implementation of current LUPs. Portions of ERMAs may need to be categorized as SRMAs to manage changing recreation patterns.

Special Recreation Permitting

There is a need to evaluate recreation needs, resource impacts, etc., across public lands (which may include specific management needs of existing or new ERMAs, SRMAs, and revised SRP policies). Additional consideration should be given to whether areas currently have or are likely to have heavy or increasing use, and if needed, use allocations should be made. There is also a need to consider what data are currently available to make these determinations and what additional data may be needed.

Recreation Facilities and Visitor Contact

Although recreation facilities and visitor contact are the primary tools used to manage recreational activities on the public lands, in the RFO, direction for the use of sites and areas is largely provided by the design of facilities, regulations posted in the area, or relatively infrequent visitor contact with a BLM employee. In many cases, the only information a visitor receives during his or her visit is from interpretive or administrative signage. The lack of a continual BLM field presence places a large burden on the user to comply with restrictions in good faith. Appropriate site design and signage can enhance resource protection and management objectives in addition to providing amenities. Although provision of facilities is a legitimate concern, it should be tied to resource management to ensure maximum benefit. Recreation sites, regulations, permits, and visitor contacts should encourage the use of "tread lightly" and "leave no trace" principles.

Developed Recreation Sites

Developed recreation sites incorporate visitor use infrastructure, defined in the Utah Standards for Public Land Health Guidelines for Recreation Management as amenities such as roads, parking areas, and facilities, to protect the resource and support the recreation user in his or her pursuit of activities, experiences, and benefits. Visitor use infrastructure is a management tool that can help minimize resource impacts, appropriately concentrate use, and reduce visitor conflicts. Developed recreation sites in the RFO help accomplish these goals. The first priority for facilities development in the RFO is for those developments that protect resources and improve visitor experiences. Table 3.9-3 describes the developed recreational sites in the RFO.

Table 3.9-3. Developed Recreation—Richfield Field Office

Otter Creek Reservoir • Fisherman's Beach • Tamarisk Point • South Point	Day use facilities, dispersed camping sites, and fishing access to the reservoir. Primary activities are fishing and boating.
Paiute ATV Trail System and Great Western Trail System	974 miles of developed Paiute ATV and Great Western Trail traversing BLM, USFS, state, and private lands. These systems are significant recreation destinations for individuals and groups and attract several large-scale OHV jamborees to the area.
Wolverton Mill	Day use and interpretive facilities at this relocated cultural site adjacent to the BLM Field Station in Hanksville.

Hog Springs Picnic Area	Day use facility. The site serves primarily as a roadside rest stop, picnic site, and trail head for a North Wash Archaeological Site.
Lonesome Beaver Campground	Fee site with day use and camping facilities, along with culinary water. Its primary use is camping.
McMillan Spring Campground	Fee site with day use and camping facilities with culinary water. Primary uses are camping, OHV use, and wildlife viewing of the area's bison.
Starr Springs Campground/Picnic Area	Fee site that features day use and camping facilities. Panorama Knoll Nature trail and the Starr Ranch are at the site. Site is primarily used for camping.
Dandelion Flat Picnic Area	Day use and primitive camping facilities. Serves picnicking and primitive camping uses. Also serves as a trail head for Mt. Ellen.
Koosharem Reservoir	Day use facilities. Site primarily serves as a roadside rest stop.

Recreation Activities

Popular recreation activities in the RFO area include camping, hiking, driving for pleasure, OHV use, and viewing scenery. Many recreation activities have grown significantly in the RFO since the implementation of current RMPs.

Front Country Recreation

Recreation that occurs along travel corridors and at highly developed sites remains popular in the RFO. As visitation to these sites increases, management of the areas may need to focus more heavily on providing defined recreation experiences. Users of front country recreation sites typically demand more extensive interpretive information and facilities. Areas that were once dispersed recreation sites may have become de facto front country recreation sites through increased use. Areas such as the Notom Road trail heads, Burr and Angel Point trail heads, Factory Butte, Mill Meadow, Koosharem, and Otter Creek Reservoirs, Paiute ATV and Great Western Trail trail heads, and others may require additional facilities for resource protection and visitor satisfaction.

Dispersed Recreation

Visitor experiences from activities such as OHV use, backcountry camping, mountain biking, rock climbing, river running, and hiking depend on low visitor density. Visitors perceive crowding as a negative factor in their enjoyment of both the resource and the activity. Recreation management for these activities should be designed to help visitors locate uncrowded areas to pursue their activity. Current management is designed with this goal in mind, but increasingly, conflicts are occurring because of a lack of separation of conflicting uses. Uses that do conflict should be separated by time and/or location. ROS designations should be applied with resource protection and visitor experiences in mind.

Recreational Off-Highway Vehicle Use

Growth of OHV use has become a significant issue within the RFO because of concerns related to the potential resource degradation that can result from high levels of use.

The number of OHV registrations in Utah has grown significantly over the past several years. Registrations in Garfield, Piute, Sanpete, Sevier, and Wayne counties have grown as well. Local and Statewide OHV registrations are shown in Table 3.9-4.

Table 3.9-4. OHV Registrations

	1999	2000	2001	2002
Garfield County	296	379	353	–
Piute County	155	182	184	–
Sanpete County	2,452	2,595	2,510	–
Sevier County	2,775	3,211	3,365	–

Wayne County	199	235	272	-
Utah	79,666	90,611	86,015	110,435[2]

Note: Registrations are for State of Utah Fiscal Years (July 1–June 30).
1 – 2002 figure is initial, not yet available by county.
Source: Utah State Tax Commission, Department of Motor Vehicles; OHV Registration

The above data show why OHV use is perceived as the one of the fastest growing activities in the RFO. With more OHVs being registered, it stands to reason that more are being used. Unfortunately, visitation data on recreation use, specifically OHV activities, can be particularly difficult to collect because of the dispersed nature of the activities. The Paiute ATV and Great Western Trail systems, however, provide a centralized location for OHV recreation.

The Paiute ATV and Great Western Trail systems (Map 25) are models for interagency cooperation, management, and monitoring. The concentrated use on these trails facilitates monitoring through the use of trail counters. Use has been monitored on these trails for the past 8 years (Table 3.9-5), during which time use nearly tripled, and then subsided slightly.

Table 3.9-5. Paiute ATV and Great Western Trail Systems Use

	1995	1996	1997	1998	1999	2000	2001	2002
Paiute ATV Trail	18,060	17,268	24,866	29,663	38,618	43,367	45,310	43,152
Great Western Trail	5,600	5,450	11,755	11,571	13,514	12,137	14,851	13,579
Total Annual OHV Use	23,660	22,718	36,620	41,234	52,132	55,504	60,160	56,731

Source: U.S. Forest Service, Fishlake National Forest: Paiute and Great Western Trails 2002 Use Report

Based on the above information, OHV management should be updated to resolve resource conflicts that pertain to other natural resources and still provide for responsible OHV use. Existing OHV use categories and designations should be reviewed and modified to meet changing resource and activity objectives. In addition, recreation features such as the Paiute ATV and Great Western Trail systems should be supported and enhanced as needed to support recreation demand.

Recreation Conflicts and Impacts

Recreational activities can conflict with one another and impact the opportunities and experiences available. Current management designations should be improved to minimize this type of conflict. One conflict in the RFO is between motorized and nonmotorized users. Heavy use of popular areas by both user groups has decreased the quality of experience for both groups. Specific management initiatives, such as travel plans, recreation zoning, OHV play areas, developed sites, and improved interpretation and education need to be developed to improve opportunities and reduce conflict.

Recreational activities may also conflict with and affect other resources and uses of the RFO. Examples of recreation conflict and impacts include damage to cultural resources, disruption of grazing activities, and damage to various natural resources. Instances of motorized use within WSAs have been recorded. There are also instances in which motorized and nonmotorized recreation is affecting wildlife habitat and wilderness experiences. The Dirty Devil drainage is one particular area of concern. As recreational prescriptions are developed, resource protection and other resource uses should be considered.

Recreation—Issues and Opportunities

Changes in the amount and type of recreational use in the RFO indicate a need for improved planning consideration of the requirements and impacts of recreational users. Public concern for recreation issues such as OHV use, camping, hiking, biking, and river running should be incorporated into the planning

effort. Increased and improved management of recreation should be a major theme of the RMP to reflect the changing use of the area.

A wide variety of recreational uses were mentioned in the scoping process for this RMP. Each of these uses had an issue or issues to be considered in the RMP analysis. Specific recreational activities mentioned included OHV use, camping (dispersed versus organized), and hiking. In many cases, scoping comments called for increased recreation management and facilities. There were also many comments requesting recreational opportunities with minimal facilities and infrastructure to allow for a primitive experience. Comments also identified the need for separating recreation activities by time and/or space in some system of recreation zoning. Future growth in recreation use of the RFO was anticipated by many of the scoping comments.

The following issues were identified through public and BLM scoping:

- The OHV designations throughout the RFO are out of date and do not address the current use patterns or their effects on other resources. OHV designations need to be reviewed, and revised as necessary, throughout the RFO, to protect other resources.
- OHV designations in WSAs specifically need to be reviewed and potentially revised.
- Consistent OHV designations should be planned and coordinated with adjoining field offices to match OHV designations between offices.
- The Paiute ATV Trail and the Great Western Trail motorized route section should be addressed.
- Rehabilitation actions stipulated in the Henry Mountains MFP for the Dirty Devil OHV Closure Area and Little Rockies NNL should be reassessed, and those proposals that remain valid need to be carried forward.
- Nasty Flat ORV Restricted Area has OHV use restricted to existing maintained roads. These roads have not been identified. The on-ground management situation needs to be clarified.
- Blue Valley (Swing Arm City) and Ticaboo OHV Activity Areas were established for specific OHV use to provide designated play areas while providing needed protection of other resources. The Ticaboo area is unused. Swing Arm City is popular, but resource concerns within the area and in adjacent areas (including the special monitoring area) are the subject of a current lawsuit.
- In response to resource concerns, the Henry Mountains MFP created an area of 13,060 acres, identified as the Factory Butte Special Monitoring Area. Monitoring stipulations specified review of this designation if warranted. The MFP mentioned that OHV use might be causing resource damage. Monitoring is under way but preliminary. This monitoring program needs to be reviewed, with alternative management strategies developed and/or revised existing strategies as necessary.
- Jet Basin was identified in the Henry Mountains MFP as having significant paleontological resources, but collecting was allowed. Collecting has been occurring, and resource values may have been degraded. There is a need to reassess the management prescriptions for this area.
- None of the plans identifies the kinds and levels of land uses that will sustain recreational values. The kinds and levels of recreation uses that will sustain recreational values within the RFO boundaries need to be identified in the new plan.
- There are lands within the RFO boundaries where new SRMAs should be considered, as well as the possibility of modifying the boundaries of existing SRMAs. BLM lands within the RFO should be reviewed to determine whether there are other lands suitable for designation as

SRMAs, and existing SRMA boundaries should be reviewed to determine whether modifications are needed. The results should be incorporated into the new planning effort.

- The Henry Mountains MFP, the Parker Mountain MFP, the Antimony portion of the Cedar-Beaver-Garfield-Antimony RMP, and the Forest MFP are silent on the issuance of SRPs. The allocation of permits for uses in the RFO should be determined and the issue of limiting uses in various categories (OHV use, guides, wilderness experience, hikers, etc.) should be addressed. Criteria should be developed for issuing SRPs, based on current permits, sensitive areas, and potential conflicts with other resources.
- SRP regulations have changed, and the new regulations need to be applied to the entire RFO, especially as they relate to the authorization of activities of organized groups. The new plan should implement the new regulations. The stage of the activity should be the focus.
- Recreational activities in the Fremont Gorge (camping, firewood cutting, rock gathering, etc.) have expanded and are in conflict with management prescriptions for the WSA and OHV designations. Options for managing these lands should be analyzed during development of the new plan.
- The Henry Mountains MFP identified specific areas for noncommercial collection of gems, minerals, and fossils. These areas overlap with WSA, NNL, and Section 202 proposed WSAs, which have conflicting management objectives. The language within the MFP specifies that no attempt would be made to limit or withdraw access. The management for these areas should be reviewed and addressed.
- The Henry Mountains MFP identified several areas for mineral withdrawal to facilitate the development of recreation sites. The withdrawals have not been completed. It should be determined whether the decision should be carried into the new plan, and a process and schedule devised for implementation of the decision.
- There are issues related to BLM authorization and monitoring of the issuance of permits for guides and outfitters. Unlike many of the adjoining States, the State of Utah does not authorize permits. The state should be contacted to determine its involvement in this matter and to suggest that the state begin permitting guides and outfitter businesses. This issue should be identified in the new RMP.

3.10 SOCIOECONOMICS

The RFO is rich in history, with a heritage that extends back several thousand years. The people of this region, dating back to the Ute, Paiute, Navajo, and Hopi tribes, and even earlier civilizations, such as the Fremont and Anasazi peoples, have maintained a very close connection to the land for survival. As these native people lived in or moved through the area, the area's plants and animals provided them with food, medicine, and clothing stuffs.

In the 1800s, European pioneer settlement began to have a greater influence in the area. These people, mostly Mormon pioneer settlers, moved in to farm and ranch the lands. The Sanpete and Sevier valleys proved fertile areas for farm production, while the areas around Parker Mountain and Monroe Mountain and extending through Capitol Reef National Park into the Henry Mountains were good for grazing livestock. The early pioneer settlements were closely tied to locations where water was available for farming and forage was available for livestock.

As early pioneers labored to make a living with agricultural products, prospectors were busy exploring the mountains of the area in search of metals and minerals that could be sold for a profit. As different materials were removed from the streams and soils of the region, another tie to the area's natural resources, mining, enhanced people's connection to the land.

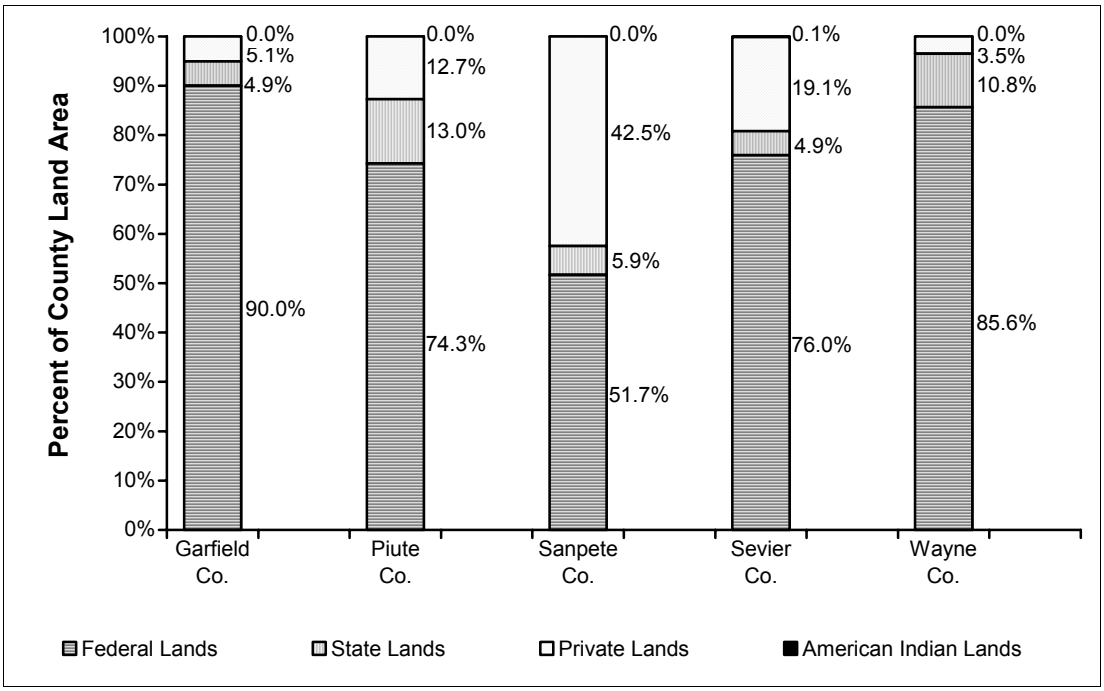
With industrialization and mechanization of agriculture, many of the initial pioneer settlements in the region matured and the roots of the natural resource–related industry and the persons associated with it became well established in the area. Agriculture and mining are still an integral part of the socioeconomic structure of the area. Through these decades and generations of close ties to the land, the RFO and the surrounding region have developed a solid heritage relationship with the land and water, plants and animals, and mountains and valleys. This social heritage is as important today as the economic connections.

In addition, industrialization and urbanization have created large populations that have a heightened regard for areas without much human development, such as the mountains and deserts of the RFO, and seek out these areas for outdoor recreation activities. Major resources in the area, such as the Paiute ATV and Great Western Trails, attract many people each year to the region. Hunting and fishing opportunities in the RFO, and in the nearby Fishlake and Manti-LaSal National Forests, complement camping, wildlife viewing, and other recreational activities as people look for a break from the urban life; residents in the RFO understand and enjoy the lifestyle that comes with living in the area. This recreation component has created yet another connection to the public lands that is important, not only to local residents, but also to those who come from other areas in Utah and even other States to enjoy these natural resources.

As manager of the public lands in the RFO, BLM makes decisions that have direct impact on the social and economic structure of the area. Primarily, decisions regarding livestock grazing on public lands, mineral development (mining), and recreational use have an impact not just on the lands, but also on the people who depend on the lands for a place to work and play. To describe the overall socioeconomic baseline of the area, the Baseline Socioeconomic Profile for the Richfield Field Office Resource Management Plan/Environmental Impact Statement was prepared as part of this RMP effort. This report documents the social, demographic, and economic characteristics of the region, including the five counties that make up the RFO. Data in the report are presented at the county and field office level. Data tables and charts from this report are presented below. These charts provide baseline information about the current social makeup of the area, as well as the current economic conditions and trends.

Geographic Characteristics

Figure 3.10-1. Land Ownership by County, 1999



Source: Utah Division of Travel Development, Department of Community and Economic Development, 2001 State and County Economic and Travel Indicator Profiles

Table 3.10-1. Geographic Characteristics of Economic Study Area

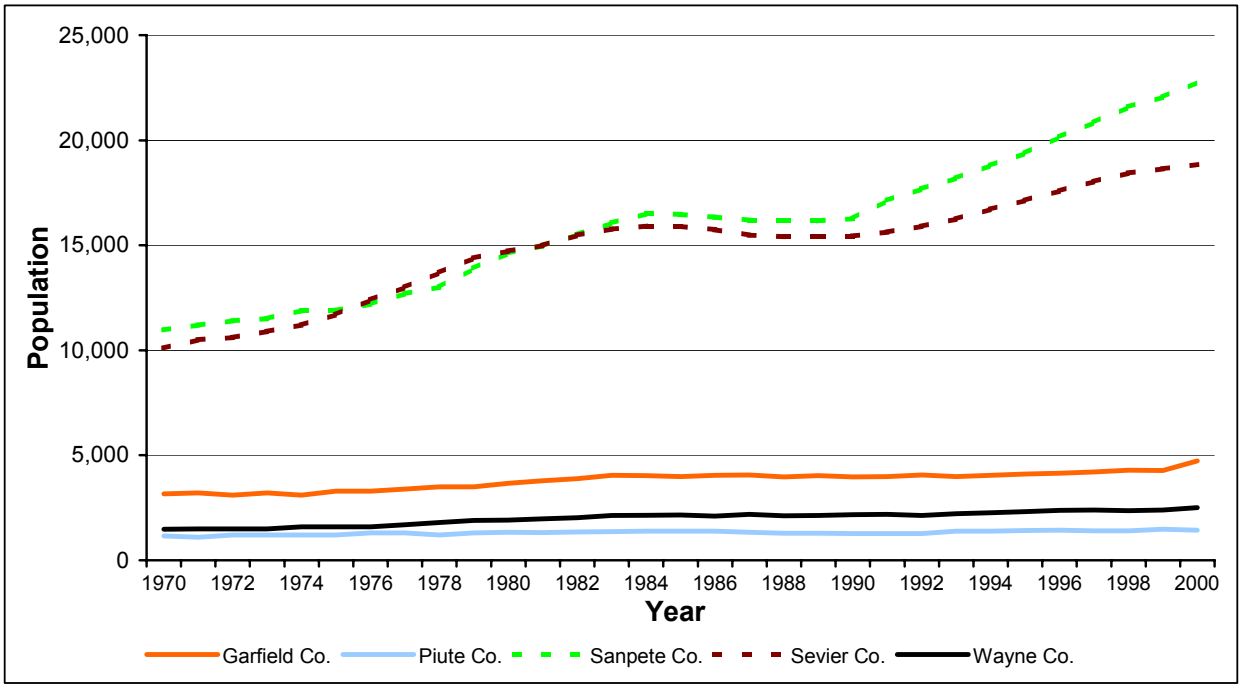
	Total Population (2000 Census)	Land Area (Million Acres)	Land Area (Sq. Miles)	Persons Per Sq. Mile
Garfield County	4,735	3.31	5,174	0.9
Piute County	1,435	0.49	758	1.9
Sanpete County	22,763	1.02	1,588	14.3
Sevier County	18,842	1.22	1,910	9.9
Wayne County	2,509	1.57	2,460	1.0
Study Area	50,284	7.61	11,890	4.2
Utah	2,233,169	52.57	82,144	27.2
United States	281,421,906	2,263.95	3,537,441	79.6

Source: Utah Division of Travel Development, Department of Community and Economic Development, 2001 State and County Economic and Travel Indicator Profiles; U.S. Census Bureau

Population

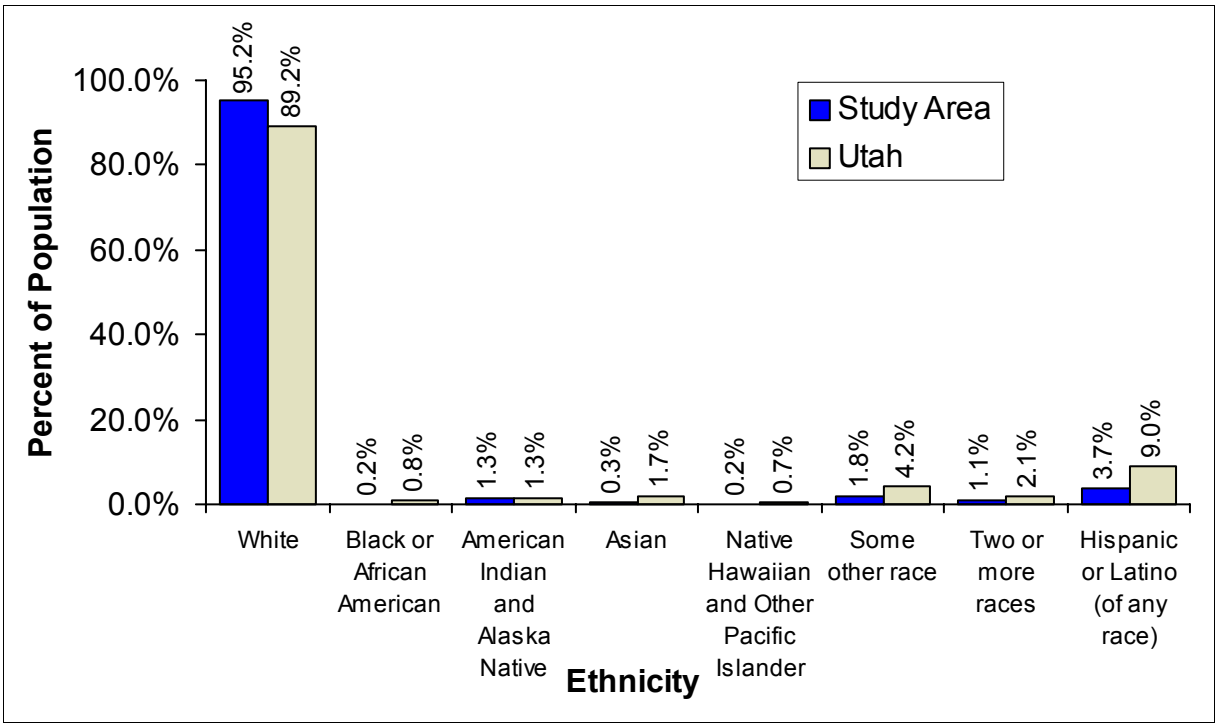
Population figures for the five counties in the study area are plotted in Figure 3.10-2. Population growth in the five counties is following an upward trend, although a few of the counties are growing at a very slow rate. In all five counties, 1999 and 2000 show the largest county populations over the past 30 years. The higher rates of growth—in Sanpete and Sevier counties—have been sustained by increased business opportunities following the construction of Interstate 70, the construction of an annex of the Utah State Prison, and expansion of other business related to retail trade. Figure 3.10-3 shows the population distribution by ethnic group for the economic study area and the State of Utah; the data for this figure were obtained from the 2000 Census.

Figure 3.10-2. Population Estimates, 1970–2000



Source: U.S. Census Bureau, Population Estimates Archives

Figure 3.10-3. Ethnicity (2000)



Source: U.S. Census Bureau, Census 2000

Table 3.10-2. Components of Population Change (1980–1999)

1990-1999										
County	**1990 Population**	**1999 Population**	**Numeric Change in Population**	**Percentage Change in Population**	**Cumulative Births**	**Cumulative Deaths**	**Numeric Natural Change in Population**	**Percentage Natural Change in Population**	**Net Migration**	**Percentage Change in Population Due to Net Migration**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Garfield	3,980	4,286	306	7.7%	624	306	318	8.0%	-12	-0.3%
Piute	1,277	1,484	207	16.2%	176	143	33	2.6%	174	13.6%
Sanpete	16,259	22,059	5,800	35.7%	3,049	1,365	1,684	10.4%	4,116	25.3%
Sevier	15,431	18,645	3,214	20.8%	2,664	1,286	1,378	8.9%	1,836	11.9%
Wayne	2,177	2,387	210	9.6%	333	182	151	6.9%	59	2.7%
Study Area	39,124	48,861	9,737	24.9%	6,846	3,282	3,564	9.1%	6,173	15.8%
Utah	1,722,850	2,129,836	406,986	23.6%	369,419	98,393	271,026	15.7%	135,960	7.9%
1980-1989										
County	**1980 Population**	**1989 Population**	**Numeric Change in Population**	**Percentage Change in Population**	**Cumulative Births**	**Cumulative Deaths**	**Numeric Natural Change in Population**	**Percentage Natural Change in Population**	**Net Migration**	**Percentage Change in Population Due to Net Migration**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Garfield	3,673	4,033	360	9.8%	894	321	573	15.6%	-213	-5.8%
Piute	1,329	1,296	-33	-2.5%	216	161	55	4.1%	-88	-6.6%
Sanpete	14,620	16,162	1,542	10.5%	3,464	1,329	2,135	14.6%	-593	-4.1%
Sevier	14,727	15,417	690	4.7%	3,355	1,252	2,103	14.3%	-1,413	-9.6%
Wayne	1,911	2,133	222	11.6%	440	159	281	14.7%	-59	-3.1%
Study Area	36,260	39,041	2,781	7.7%	8,369	3,222	5,147	14.2%	-2,366	-6.5%
Utah	1,461,037	1,705,865	244,828	16.8%	381,549	88,034	293,515	20.1%	-48,687	-3.3%

Source: U.S. Census Bureau, Population Estimates Archives

Poverty

Table 3.10-3 summarizes the estimated poverty rates for each of the five counties within the economic study area, the study area as a whole, the State of Utah, and the entire United States. In 1989 all five counties had a higher poverty rate than did the state or the nation, but in 1999 Sevier and Garfield counties both had a lower rate of individuals under the poverty line than did the United States. Garfield County's 1999 rate was lower than that of both Utah and the nation. The percentage of individuals living below poverty level in all five counties in the study area, the State of Utah, and the nation as a whole decreased from 1989 to 1999.

Table 3.10-3. Individuals Below Poverty Level (1989, 1999)

	1989	1999
Garfield County	14.5%	8.1%
Piute County	20.7%	16.2%
Sanpete County	19.7%	15.9%
Sevier County	14.7%	10.8%
Wayne County	16.5%	15.4%
Study Area	17.0%	13.0%
Utah	11.3%	9.4%
United States	12.9%	12.4%

Sources: U.S. Census Bureau, American FactFinder Quick Tables: DP-3 Profile of Selected Economic Characteristics: 2000; U.S. Census Bureau, 1990 STF 3 – P117 – Poverty Status in 1989 by Age.

Personal Income

Personal income can be broken down into three categories: labor income, investment income, and transfer payments income. Labor income is derived from wages, salaries, and self-employment income. Investment income includes income from rents, dividends, and interest earnings. Finally, transfer payments are largely derived from Social Security or other retirement benefits, Medicare and Medicaid benefits, and other income support and assistance. Table 3.10-4 summarizes components of personal income for 1980, 1990, and 2000 for the study area in 2001 inflation-adjusted dollars.

Table 3.10-4. Personal Income—Economic Study Area (1980, 1990, 2000)

	Real Dollars (2001 $)		
	1980	**1990**	**2000**
Total Personal Income (1,000 $)[1]	$508,415	$590,554	$844,732
Labor Income[2]	$334,226	$374,265	$537,234
Investment Income[3]	$100,089	$113,067	$144,593
Transfer Payments Income[4]	$74,100	$103,221	$162,905
Population	36,260	39,124	50,284
Per Capita Personal Income ($)	$14,021	$15,094	$16,799
Per Capita Labor Income ($)	$9,217	$9,566	$10,684
Per Capita Investment Income ($)	$2,760	$2,890	$2,876
Per Capita Transfer Payments Income ($)	$2,044	$2,638	$3,240
Percentage of Total Personal Income	**1980**	**1990**	**2000**
Labor Income	65.7%	63.4%	63.6%
Investment Income	19.7%	19.1%	17.1%
Transfer Payments Income	14.6%	17.5%	19.3%
Total	100.0%	100.0%	100.0%
Personal Income Growth	**1980–1990**	**1990–2000**	**1980–2000**
Total Personal Income	14.9%	35.4%	49.7%
Labor Income	11.3%	35.8%	46.6%
Investment Income	12.2%	24.5%	36.4%
Transfer Payments Income	32.8%	44.9%	74.9%
Per Capita Personal Income	2.8%	3.8%	4.5%

	Real Dollars (2001 $)		
Per Capita Labor Earnings	2.4%	7.0%	9.5%
Per Capita Transfer Payments	6.3%	5.9%	12.0%

Notes:
1 – Personal contributions for social insurance are included in earnings by type, but they are excluded from personal income. An adjustment for residence is calculated as the net inflow of earnings from inter-area commuters.
2 – Labor income includes wages, salaries, and self-employment income.
3 – Investment income includes rents, dividends, and interest earnings.
4 – Transfer payments are largely derived from Social Security benefits, Medicare and Medicaid benefits, and other income support assistance.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, Table CA05 (Personal Income by Major Source and Earnings by Industry) for the years 1980, 1990, and 2000; U.S. Census Bureau, Census 2000

Employment

Table 3.10-5 shows the total annual employment for the study area, the State of Utah, and the United States for 1980, 1990, and 2000, permitting examination of industry employment trends. Total employment in the economic study area has increased more than 64 percent over the 20-year period, from 15,606 jobs in 1980 to 25,663 jobs in 2000. This growth rate exceeds the national rate (46.6 percent) but lags behind the Utah growth rate, which is over 102 percent.

Table 3.10-5. Employment by Industry (1980, 1990, 2000)

Employment By Industry	1980	1990	2000
Farm Employment	2,480	2,296	2,508
Federal, State and Local Government Employment	3,161	3,860	5,114
Total Private Employment (by Industry Following)	9,965	11,046	18,041
Agricultural Services, Forestry, Fishing, and Other	120	233	302
Mining[2]	777	350	389
Construction	1,203	710	1,513
Manufacturing	1,755	1,779	2,066
Transportation and Public Utilities	639	800	1,484
Wholesale Trade	297	412	552
Retail Trade	2,338	2,825	4,388
Finance, Insurance, and Real Estate	592	633	1,338
Services	2,244	3,316	5,980
Total Full-Time and Part-Time Employment[1]	15,606	17,202	25,663
Percentage of Total Employment	**1980**	**1990**	**2000**
Farm Employment	15.9%	13.3%	9.8%
Federal, State and Local Government	20.3%	22.4%	19.9%
Total Private Employment (by Industry Following)	63.9%	64.2%	70.3%
Agricultural Services, Forestry, Fishing, and Other	0.8%	1.4%	1.2%
Mining	5.0%	2.0%	1.5%
Construction	7.7%	4.1%	5.9%
Manufacturing	11.2%	10.3%	8.1%
Transportation and Public Utilities	4.1%	4.7%	5.8%
Wholesale Trade	1.9%	2.4%	2.2%
Retail Trade	15.0%	16.4%	17.1%
Finance, Insurance, and Real Estate	3.8%	3.7%	5.2%
Services	14.4%	19.3%	23.3%
Total Full-Time and Part-Time Employment	100.0%	100.0%	100.0%

Employment Growth by Sector	1980–1990	1990–2000	1980–2000
Farm Employment	-7.4%	9.2%	1.1%
Federal, State, and Local Government	22.1%	32.5%	61.8%
Total Private Employment (by Industry Following)	10.8%	63.3%	81.0%
Agricultural Services, Forestry, Fishing, and Other	94.2%	29.6%	151.7%
Mining	-55.0%	11.1%	-49.9%
Construction	-41.0%	113.1%	25.8%
Manufacturing	1.4%	16.1%	17.7%
Transportation and Public Utilities	25.2%	85.5%	132.2%
Wholesale Trade	38.7%	34.0%	85.9%
Retail Trade	20.8%	55.3%	87.7%
Finance, Insurance, and Real Estate	6.9%	111.4%	126.0%
Services	47.8%	80.3%	166.5%
Total Full-Time and Part-Time Employment	10.2%	49.2%	64.4%

Notes: 1 – Because total employment includes both full-time and part-time jobs, individuals with more than one job are counted twice. 2 – There was not enough information reported to estimate mining employment for Garfield County; subsequently figures were obtained from the Governor's Office of Planning and Budget, State of Utah Long-Term Economic and Demographic Projections

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, Table CA25 (Total Full-Time and Part-Time Employment by Industry) for the years 1980, 1990, and 2000; Sonoran Institute EPS

Economic Base Analysis

An area's economic foundation is composed of the industries that are primarily responsible for bringing outside income into the local economy. These industries include manufacturing, mining, and agriculture (not agricultural services). In addition, certain government sectors, mainly Federal and state government, are considered basic in nature because employees are paid from sources outside the local area. Outside income can also be derived from nonlabor sources (investment income and transfer payments). Table 3.10-6 provides a breakdown of the components of the economic base and outside sources of income for the study area for 1980 and 2000.

Table 3.10-6. Estimated Personal Income from Basic Industries or Outside Sources (1980, 2000)

Dollar Figures Are in 2001 Real Dollars	Personal Income by Source (1,000$)		Percentage of Total Personal Income	
(1)	(2)	(3)	(4)	(5)
	1980	2000	1980	2000
Transfer Payments	$74,100	$162,905	14.6%	19.3%
Investment Income	$100,089	$144,593	19.7%	17.1%
Manufacturing	$40,459	$47,977	8.0%	5.7%
Mining	$39,749	$16,558	7.8%	2.0%
Farm Income	$18,282	$38,584	3.6%	4.6%
Federal and State Government	$46,198	$79,200	9.1%	9.4%
Total Basic Industries Income	$318,877	$489,817	62.7%	58.0%
Total Personal Income	$508,415	$844,732	-	-

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, Table CA05 (Personal Income by Major Source and Earnings by Industry) for years 1980, 1990, and 2000; Sonoran Institute EPS.

Property Valuation and Taxation

Total property valuation for 2000 for the five counties in the study area is summarized in Table 3.10-7. Property taxes charged against each class of property are shown in Table 3.10-8. Data include both state and local assessments. In addition to conducting standard property assessments, the State of Utah assesses taxes on utility and natural resource properties. There are several types of natural resource properties, including oil and gas extraction, metal mines, coal mines, sand and gravel mines, and non-

metal mines (Table 3.10-9). The total amount of state tax revenue from natural resources in the study area was nearly $1.4 million during 2000 (Table 3.10-10).

Table 3.10-7. Assessed Property Valuations by County (2000)

	Valuation of State Assessed Property			Valuation of Locally Assessed Property					
Dollar Figures Are in 2001 Real Dollars	Utilities	Natural Resources	Total State Assessed Property	Residential Property	Commercial and Industrial Property	Agricultural Property	Personal Property	Total Locally Assessed Property	Total State and Locally Assessed Property
Garfield	$30,527,867	$10,833,903	$41,361,770	$127,717,970	$55,689,360	$41,685,802	$13,653,500	$238,746,632	$280,108,401
Piute	$10,382,855	$387,751	$10,770,606	$22,707,565	$2,629,233	$9,204,924	$955,631	$35,497,353	$46,267,959
Sanpete	$48,211,496	$6,210,758	$54,422,254	$373,063,884	$52,444,086	$134,592,649	$25,053,804	$585,154,423	$639,576,667
Sevier	$70,958,185	$115,962,536	$186,920,721	$306,624,652	$73,557,965	$54,323,240	$30,891,939	$465,397,796	$652,318,517
Wayne	$9,143,351	$993,944	$10,137,296	$52,050,728	$22,250,109	$35,827,699	$4,302,143	$114,430,679	$124,567,974
Total-Study Area	$169,223,755	$134,388,892	$303,612,646	$882,164,798	$206,570,754	$275,634,313	$74,857,018	$1,439,226,883	$1,742,839,519

Source: 2000 Annual Statistical Report, Property Tax Division, Utah Tax Commission—Local Personal, and Centrally Assessed Property

Table 3.10-8. Property Taxes Charged Against Each Class of Property (2000)

Dollar Figures Are in 2001 Real Dollars	Total Real Property	Total Personal Property	Total Locally Assessed	Total Utilities	Total Natural Resources	Total State Assessed	Total Local and State Assessed	Fee-In Lieu Motor Vehicle	Total Property Tax Charged
Garfield	$2,341,565	$142,649	$2,484,213	$317,299	$98,600	$415,899	$2,900,112	$364,178	$3,264,289
Piute	$360,330	$10,024	$370,354	$102,953	$3,687	$106,641	$476,995	$131,766	$608,761
Sanpete	$5,767,942	$269,291	$6,037,232	$472,973	$64,871	$537,845	$6,575,077	$1,372,989	$7,948,066
Sevier	$5,222,153	$372,646	$5,594,798	$783,317	$1,213,079	$1,996,396	$7,591,195	$1,525,708	$9,116,903
Wayne	$718,554	$28,271	$746,825	$59,861	$6,395	$66,256	$813,082	$199,594	$1,012,675
Total-Study Area	$14,410,542	$822,881	$15,233,423	$1736403	$1,386,633	$3,123,037	$18,356,460	$3,594,235	$21,950,695

Source: 2000 Annual Statistical Report, Property Tax Division, Utah Tax Commission—Local Personal, and Centrally Assessed Property

Table 3.10-9. Assessed Value of Natural Resource Property (2000)

Dollar Figures Are in 2001 Real Dollars	Oil and Gas Extraction	Metal Mines	Coal Mines	Sand and Gravel	Non-Metal Mines	Total Natural Resource
Garfield	$4,275,109	$5,560,468	$0	$998,326	$0	$10,833,903
Piute	$0	$232,501	$0	$0	$155,250	$387,751
Sanpete	$128,195	$35,942	$0	$3,442,751	$2,603,871	$6,210,758
Sevier	$0	$41,804	$96,117,271	$2,542,489	$17,260,972	$115,962,536
Wayne	$0	$0	$0	$464,377	$529,567	$993,944
Total-Study Area	$4,403,304	$5,870,715	$96,117,271	$7,447,944	$20,549,659	$134,388,892

Source: 2000 Annual Statistical Report, Property Tax Division, Utah State Tax Commission—Local Personal, and Centrally Assessed Property

Table 3.10-10. Property Taxes Charged Against Natural Resource Property (2000)

Dollar Figures Are in 2001 Real Dollars	Oil and Gas Extraction	Metal Mines	Coal Mines	Sand and Gravel	Non-Metal Mines	Total Natural Resource
Garfield	$38,856	$50,028	$0	$9,716	$0	$98,600
Piute	$0	$2,211	$0	$0	$1,476	$3,687
Sanpete	$4,100	$363	$0	$33,345	$27,064	$64,872
Sevier	$0	$434	$999,260	$26,386	$186,999	$1,213,079
Wayne	$0	$0	$0	$2,987	$3,407	$6,394
Total-Study Area	$42,955	$53,036	$999,260	$72,435	$218,947	$1,386,633

Source: 2000 Annual Statistical Report, Property Tax Division, Utah State Tax Commission—Local Personal, and Centrally Assessed Property

Payments In Lieu of Taxes (PILT) are made by the Federal government to compensate counties for property tax revenue lost because of public lands. PILTs are calculated with a complex formula that considers a number of factors, including other Federal transfers such as royalties and annual charges. Table 3.10-11 shows the PILTs to each county from 1999 to 2001.

Table 3.10-11. Payments in Lieu of Taxes (1999–2001)[1]

	1999	2000	2001
Garfield	$218,972	$230,069	$357,580
Piute	$66,962	$68,404	$98,063
Sanpete	$407,730	$416,578	$587,296
Sevier	$516,541	$528,476	$770,753
Wayne	$123,311	$128,121	$189,476
Study Area	$1,333,515	$1,371,648	$2,003,168

Notes: 1 – Dollar figures are in 2001 Real Dollars.

Source: BLM Payments in Lieu of Taxes Web site

Mineral Extraction Economics

Mining directly provided 389 jobs in the study area during 2000. Total earnings for 2000 in the mining sector were nearly $16.6 million. Average earnings for a mining job during that year were approximately $42,500. The majority of mining activity in the study area, however, is limited to Sevier County. Of the 389 jobs attributed to mining that were reported in the study area, 358 were in Sevier County. Similarly, of the nearly $16.6 million earned from mining in 2000, more than $15.5 million was reported from Sevier County.

Tables 3.10-12 and 3.10-13 show physical production figures for oil and gas production in the study area. It should be noted that while there has been recent oil and gas production in the economic study area, there were no producing wells on public lands in the BLM RFO.

Table 3.10-12. Oil Production (1992–2001)

Counties[1]		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Garfield	Barrels	310,858	282,058	273,266	260,031	250,315	239,969	222,038	220,179	214,266	206,270
	2001$	$7,185,870	$5,740,817	$5,101,613	$5,137,343	$5,776,537	$4,780,552	$2,940,704	$4,067,142	$6,254,254	$4,969,044
Sanpete	Barrels	-	-	-	-	230	83	-	72	-	20
	2001$	-	-	-	-	$5,308	$1,653	-	$1,330	-	$482
Study Area	Barrels	310,858	282,058	273,266	260,031	250,545	240,052	222,038	220,251	214,266	206,290
	2001$	$7,185,870	$5,740,817	$5,101,613	$5,137,343	$5,781,845	$4,782,205	$2,940,704	$4,068,472	$6,254,254	$4,969,526

Note: 1: No oil production has been reported in Piute, Sevier, or Wayne County between 1984 and 2001.

Sources: Utah Division of Oil, Gas and Mining—Utah Oil and Gas Production by County; Utah Energy Statistical Abstract (1999); Glade Sowards, Natural Resource Analyst for the Utah Office of Energy and Resource Planning (January 2003)

Table 3.10-13. Natural Gas Production (1997–2001)[1]

Counties[2]		1997	1998	1999	2000	2001[4]
Garfield	mcf[3]	-	2,300	9,123	6,875	9,125
	2001$	-	$4,209	$18,386	$23,071	$33,398
Sanpete	mcf[3]	425	-	-	-	100
	2001$	$848	-	-	-	$366
Study Area	mcf[3]	425	2,300	9,123	6,875	9,225
	2001$	$848	$4,209	$18,386	$23,071	$33,764

Notes:
1 –There was no natural gas production reported in the economic study area between 1984 and 1996.
2 – No natural gas production has been reported in Piute, Sevier, or Wayne counties between 1984 and 2001.
3 – mcf = thousand cubic feet.
4 - 2001 value of production data is figured using estimated wellhead prices obtained from UDOGM.

Sources: Utah Division of Oil, Gas and Mining—Utah Oil and Gas Production by County; Utah Energy Statistical Abstract (1999); Glade Sowards, Natural Resource Analyst for the Utah Office of Energy and Resource Planning (Jan. 2003); Energy Information Administration – Historical Natural Gas Annual 1930 – 2000 (Table 7)

Coal production in the economic study area is attributable entirely to coal resources within Sevier County. Sevier County is the third highest producer of coal in Utah and contains the highest producing coal mine in the State. Table 3.10-14 shows coal production from 1984 through 2001.

Table 3.10-14. Coal Production (1984–2001)

Counties[1]		1984	1985	1986	1987	1988	1989	1990	1991	1992
Sevier	Unit[2]	2,141,000	1,797,000	2,360,000	2,228,000	2,625,000	3,059,000	2,887,000	3,079,000	2,580,000
	2001$	$96,113,384	$74,079,461	$94,657,512	$80,983,867	$82,325,371	$88,794,500	$79,919,360	$81,211,800	$67,144,882
		1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Sevier	Unit[2]	3,553,000	3,569,000	3,906,000	4,214,000	4,939,000	5,719,000	5,763,000	5,906,000	6,111,000
	2001$	$87,581,011	$81,639,793	$83,269,860	$85,263,758	$97,173,834	$107,867,625	$104,468,169	$102,298,887	$108,531,360

Notes:
1 – No coal production has been reported in Garfield, Piute, Sanpete, or Wayne County between 1980 and 2001.
2 – Units are shown in short tons.

Source: Jahanbani, F.R. 2001

The production values for each of the mineral resources describe gross sales for crude resources. The revenue generated from production listed in the above tables does not necessarily circulate through the study area economy because the mining interests producing in the study area are not necessarily locally owned and operated. Mining does, however, produce direct and indirect labor earnings (Table 3.10-4) and tax revenues (Tables 3.10-8 and 3.10-10) that circulate through the study area economy. Although production and revenue from coal resources have increased, total employment and income from mining in the study area have declined steeply over the past two decades.

Grazing Economics

Livestock use of BLM lands in the study area has remained relatively stable over the past 4 years. The table in the Livestock section of the MSA titled Livestock Grazing Use displays a 14-year history of the AUMs licensed each year. This information shows that the number of AUMs licensed yearly has been trending upward, with significant drops in 2000 and 2002 due to severe drought conditions. Based on this information, coupled with the agricultural production information found in the Baseline Socioeconomic Profile, an average economic impact from grazing on public lands can be determined. Table 3.10-15 describes the average value of cattle and sheep production from AUM usage in the BLM RFO from 1988 to 2001.

Table 3.10-15. Value of Grazing Output, Richfield Field Office Public Lands

Annual Average AUMs (14-Year Average) 1988–2001	
Cattle	46,383
Sheep	9,271
Total	55,654
Estimated Value of Production	
Cattle (2001$/AUM) (1988–2001: 14-year average)	$24.63
Sheep (2001$/AUM) (1988–2001: 14-year average)	$16.82
Value of Grazing Output from Richfield BLM Lands (2001$)	
Cattle	$1,142,487
Sheep	$155,932
Total	$1,298,419

Sources: BLM Richfield Field Office; U.S. Department of Agriculture, National Agricultural Statistics Service, Utah Agriculture Statistics Service

The 14-year production average indicates the value of grazing output from RFO BLM lands to be nearly $1.3 million per year. Combined with the information from the Baseline Socioeconomic Report, these data show that approximately 1 percent of the value of livestock production in the study area can be attributed to public lands grazing.

Recreation and Tourism Economics

The Utah Division of Travel Development estimates that there were 2,462 travel- and tourism-related jobs in the study area during 2000. The division's estimates for travel and tourism jobs, traveler spending, and tourism tax revenues are shown in Table 3.10-16. Trends for 1998 through 2000 indicate a slight decline in travel to the area and an associated decline in spending, tax revenue, and travel-related jobs.

Table 3.10-16. Travel and Tourism Indicators (1998–2000)

Spending by Travelers[1]	1998	1999	2000
Garfield	$55,642,345	$62,025,759	$56,066,193
Piute	$1,269,407	$1,775,148	$1,841,590
Sanpete	$25,599,710	$24,538,810	$24,759,158
Sevier	$38,928,484	$37,486,949	$36,217,942
Wayne	$14,175,046	$13,470,241	$14,016,548

Spending by Travelers[1]	**1998**	**1999**	**2000**
Study Area	$135,614,992	$139,296,907	$132,901,431
Travel- and Tourism-Related Employment	**1998**	**1999**	**2000**
Garfield	974	1,114	1,038
Piute	23	32	35
Sanpete	448	441	458
Sevier	680	673	671
Wayne	249	242	260
Study Area	2,374	2,502	2,462
Local Tax Revenues From Traveler Spending[1]	**1998**	**1999**	**2000**
Garfield	$1,158,228	$1,290,950	$1,166,852
Piute	$27,292	$37,069	$39,390
Sanpete	$532,516	$511,034	$514,827
Sevier	$808,824	$779,916	$754,234
Wayne	$295,878	$280,473	$292,301
Study Area	$2,822,738	$2,899,443	$2,767,603
Notes: 1 – Dollar figures are in 2001 Real Dollars.			
Source: Utah Division of Travel Development, Department of Community and Economic Development; 2001 State and County Economic and Travel Indicator Profiles			

BLM Recreation Visitor Days

Table 3.10-16 shows travel and tourism indicators for all sectors in the five counties that make up the economic study area. Table 3.10-17 shows the estimated recreation visitation and visitor days (1 visitor day = 12 hours of participation in any recreational activity) for BLM resources in the RFO for FY99, 2000, and 2001 (The Federal government's fiscal year extends from October 1 to September 30.) Recreation visitation data for the study area are collected by BLM in its RMIS. The large differences in some of the recreation numbers between fiscal year 2000 and 2001 are attributable to a BLM adjustment in the method of estimation for these activities.

Table 3.10-17. Richfield Field Office—Recreation Visitation[1]

Activity	Oct. 1998–Sept. 1999		Oct. 1999–Sept. 2000		Oct. 2000–Sept. 2001		Oct. 2001–Sept. 2002	
	Participants	Visitor Days[2]	Participants	Visitor Days[2]	Participants	Visitor Days[2]	Participants	Visitor Days[2]
Backpacking	46,481	231,035	52,452	262,514	72,368	74,079	54,754	56,338
Camping	64,026	64,707	71,088	70,957	128,418	125,787	98,951	96,285
Climbing (Mountain/Rock)	1,665	439	1,894	473	2,122	583	1,514	414
Driving for Pleasure	132,377	47,265	148,694	53,496	156,429	73,151	129,200	55,149
Environmental Education	420	247	210	107	2,320	800	1,769	639
Fishing (Freshwater)	16,915	3,406	23,705	5,097	26,815	5,890	28,075	6,215
Gather Non-Comm. Prod.	4,935	1,234	4,975	1,244	4,885	1,221	4,825	1,206
Hiking/Walking/Running	27,590	4,103	24,192	4,025	80,699	42,967	62,744	31,152
Horseback Riding	5,225	1,578	5,173	1,472	4,905	1,026	4,825	1,005
Hunting—Big Game	17,977	42,528	21,398	48,876	22,364	15,878	18,684	12,240
Hunting—Small Game	9,870	2,056	9,950	2,073	9,770	2,035	9,650	2,010
Hunting—Waterfowl	410	68	800	133	990	165	1,055	176
OHV (ATV)	20,524	3,614	25,893	4,465	75,751	29,652	60,945	22,254
OHV (Cars/Trucks/SUVs)	19,882	17,464	20,733	19,696	76,600	43,785	58,804	31,954
Pack Trips	1,677	2,294	1,913	2,605	2,076	2,078	1,478	1,476
Picnicking	41,170	3,914	43,557	4,103	112,439	9,811	81,422	7,213
Power Boating	6,270	1,045	7,580	1,263	8,110	1,352	8,290	1,382
Rockhound/Mineral Coll.	3,308	827	3,787	947	4,128	1,032	2,951	738
Row/Float/Raft	1,654	13,231	1,894	15,149	2,064	2,069	1,476	1,476
Snow Play (General)	4,935	823	995	166	977	81	965	80
Swimming/Water Play	6,690	969	8,400	700	9,125	760	9,360	780
Target Practice	9,870	823	9,950	829	9,770	814	9,650	804
Viewing (Wildlife)	39,062	6,014	44,173	6,840	46,832	7,356	41,131	5,897
Viewing (All Other)	16,861	1,351	15,691	1,306	16,228	1,373	14,732	1,203
Other	-	-	100	83	117	141	104	106
Total	499,794	451,035	549,197	508,619	876,302	443,886	707,354	338,192

Notes: 1 –Recreation estimates prior to Fiscal Year 2001 were believed to be somewhat inaccurate, so methodology for FY01 RMIS estimation was improved, resulting in significantly lower *visitor day* estimates for the RFO in 2001. Large declines in visitor day estimates between 2000 and 2001 should not be interpreted as an actual decrease in visits, rather a change in estimation methodology. Similarly, the large increase in participants in 2001 should be attributed to the change in data collection and estimation. 2 – A recreation visitor day is equivalent to 12 hours of participation in a given recreational activity.

Source: Bureau of Land Management, Recreation Management Information System

Environmental Justice

Pursuant to Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations, 59 Reg 7629 (February 11, 1994), BLM is required to ensure that its programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities because of race, color, or national origin. In addition, BLM must give due consideration to its programs', policies', and activities' economic impacts on and benefits to low-income populations.

Relevant census data for the counties within the study area were collected to determine whether the populations residing within the five study area counties constitute an environmental justice population, as defined by guidance from the CEQ and BLM IM 2002-164. This guidance defines an environmental justice population as one that meets either of the following criteria:

- At least one-half of the population is of minority or low-income status.
- The percentage minority or low-income status populations is meaningfully greater than that of the corresponding population in the general population or other appropriate unit of geographical analysis (CEQ 1997, BLM 2002a).

For the purposes of this study, a meaningful difference between surrounding population figures and study area population figures is defined as a difference greater than 10 percentage points. Given this definition, there are no populations within the study area that meet the criteria to be classified as an environmental justice population.

The planning area shows little or no geographical concentration of minority populations (see Figure 3.10-3). Given the relative lack of minority populations in or adjacent to the planning area it is not anticipated that the plan alternatives will have any disproportionately high or adverse economic effects on minority populations.

Analysis of the income structure and distribution reveals minor variations in personal income over the extent of the planning area. Based on data from Census 2000 (see Table 3.10-3), all five counties in the study area are within 7 percentage points of the state's percentage of individuals below the poverty level. For this reason, alternatives in the EIS will not disproportionately affect low-income populations.

Economics—Issues and Opportunities

The economic impacts of uses associated with public lands are one of the predominant concerns of the local communities. The RMP should consider the impacts that management of BLM-administered public lands might have on the individuals, businesses, and communities that rely on the resource. The RMP should also make an effort to consider both the social and economic costs and benefits associated with the management of each resource. The analysis needs to include the potential impacts on the economy caused by restrictions on resource uses within the RFO. Both the short- and long-run economic well-being of the communities in the area should be considered as resource allocation decisions are made.

The counties and communities encompassed by the RFO have historically been closely tied to use of the public lands. Scoping revealed a need to relate land use planning efforts to local economies. Many comments indicated that local residents believed that BLM decisions would cause undue harm to local economies. Comments indicated that uses of public lands managed by BLM should support local economies and maintain historical parts of local communities and their economy. Portions of alternatives that could have economic impacts need to be evaluated in terms of local consequences.

3.11 SOILS

Soil composition determines vegetation growth and wildlife habitats. Soil types are also related to water quality, salinity, and erosion throughout the RFO. BLM does not directly manage soils, but considers impacts on soils, including salinity control, water quality, and erosion, in relation to other management decisions. This section provides an overview of the soil types in the RFO. This will serve as a baseline for future analysis of resource management impacts.

Generally speaking, the main issue relating to soils is erosion. Erosion has an impact on salinity content in the RFO watersheds. For those watersheds that are part of the Colorado River Basin, this ties them to the guidance in the Colorado River Salinity Control Act. Through this planning process and in evaluating the impacts of resource decisions, erosion impacts, especially in critical areas of high salinity content, will need to be analyzed.

Soils—Current Land Use Plan Direction

Most of the RFO MFPs and RMPs do not specifically address soils management. Instead, goals related to soils management are commonly found embedded in the objectives for watershed management. These objectives generally provide the BLM with guidance to restore, maintain, and improve the soil productivity and to enhance on-site resource use (BLM Manual 1603). BLM-M-1602 directs BLM to conduct programs with the understanding of complete ecosystems as they are affected by other agencies, organizations, and individuals whose responsibilities and activities affect the condition of and use of the public lands and other lands nearby (BLM Manual 1602).

Each of the previous plans addressed the issue of erosion at very different levels of detail. Some plans provide very general, overall direction, whereas other plans are watershed specific with tightly articulated objectives for specific erosion reduction amounts identified. It needs to be noted that while the previous planning direction contains guidance in terms of soil surface factors (SSF), this method of measurement is no longer used by the BLM.

Forest MFP, 1977

- Improve the vegetation cover; restore, maintain, and improve soil productivity; reduce and prevent accelerated erosion; and enhance on-site resource uses.
- Attain an SSF rating of ±40 on 51,000 acres and maintain an SSF rating of ± 30–35 on 44,000 acres, within 15 years.

Forest MFP decisions were suspended pending development of the San Rafael Grazing Management EIS. That environmental analysis was combined with that for the San Rafael RMP, which was completed in 1991.

Mountain Valley MFP, 1981

The Mountain Valley MFP contains watershed-specific planning direction with specific goals related to SSF. Because these goals are related to water quality, the specific goals can be referenced under the corresponding headings in the Water section of this document.

Henry Mountains MFP, 1982

- Improve those watershed and soil condition classes that can be improved by at least one condition class over the next 10 to 20 years.
- Stabilize the developed gullies, and restore and maintain the vegetation on the steep slopes on the east side of the Nasty Flat allotment.

- Stabilize the streambed and reduce the current rate of streambank erosion in the Bull Creek drainage.
- Reduce the loss of soil from the Meadow Gulch site into the Dirty Devil River and subsequently into Lake Powell.

Parker Mountain MFP, 1983

- Reduce the soil erosion on 7,500 acres of public land in the Torrey Watershed from a moderate Cedar-Beaver-Garfield-Antimony RMP, 1986
- Improve watershed conditions on areas identified with significant erosion condition problems.

San Rafael RMP, 1991

- Manage the soil resource to maintain or increase soil productivity, prevent or minimize accelerated soil erosion, and prevent or minimize flood and sediment damage, as needed.
- Maintain the soil database by updating ecological site descriptions from information collected through range monitoring and other specific studies, and share information with the National Resource Conservation Service (NRCS).
- Maintain soil productivity and vegetation cover at or above the threshold necessary to avoid exceeding the soil loss tolerance for critical soils.

Soils—Existing Management

BLM manages multiple resource uses, within the framework of applicable laws, to reduce adverse impacts on the soil resource. Emphasis is placed on reducing impact on critical soils and mitigating impacts on soils as long as other resource values are protected. BLM manages uses and implements actions to achieve the following:

- Maintain or increase soil productivity
- Prevent or minimize accelerated soil erosion
- Prevent or minimize flood and sediment damage, as needed
- Reduce resource loss from floods and erosion
- Maintain vegetation cover at or above the level necessary to avoid exceeding the NRCS critical soil loss threshold.

Various management actions are used to protect and enhance the soil resource. Soils highly susceptible to erosion may be protected by land use restrictions. These may include, but are not limited to, the following:

- OHV limitations
- NSO
- Restriction on surface disturbing activities during critical watershed periods (i.e., spring runoff)
- Adjustments in grazing, rest or rotation
- Installation of watershed structures
- Revegetation measures.

While not specifically noted in the previous planning direction, floodplains are managed to avoid long- and short-term adverse impacts associated with the occupancy and modification of floodplain development. This includes avoiding or mitigating development within floodplains to minimize potential harm to or within a given floodplain.

Soils—Resource Condition

Soil data on a family or series level are not available for many areas of the RFO. The data that do exist are inconsistent throughout the RFO. The existing information is usually related to the planning efforts for the geographic areas that used to be known as resource areas or planning units. This section presents soils information from previous planning efforts, in addition to information that has been generated since those planning documents were completed. Information applicable to the RFO is presented first, followed by information from each planning area.

High Runoff Potential

The interaction between soils and water impacts watershed resources. The condition of the soil surface, including vegetation, largely determines the amount of runoff from an area. Soils with a high runoff potential consist chiefly of clays and shallow soils to bedrock or hardpan, badlands and rock outcrops, as well as areas with little to no vegetation. These soils have very slow infiltration rates. Soils with high runoff potential can occur along floodplains of major stream channels and are subject to flooding for some period of time. In addition, many small drainages are subject to infrequent flash flooding during intense localized convective storms.

Wind Erosion

Soils that have a high percentage of sand-size particles are highly susceptible to wind erosion. Soils with little to no vegetation or cryptogamic cover are also sensitive to wind erosion. Surface disturbance and vegetation removal on these soils may increase soil movement and/or loss. Soils susceptible to wind erosion have a very high proportion of sands and little binding clay or organic matter. Under conditions of prolonged drought or large-scale surface disturbance, wind erodes these soils. Structures such as fences, cattle guards, roads, and reservoirs can be damaged, covered, or removed by wind erosion. Areas susceptible to wind erosion are shown in Map 17. At the landscape level, approximately 896,900 acres of public land in the RFO have a moderate potential for wind erosion. If more specific soil surveys are used, areas may show higher or lower wind erosion potential.

Water Erosion

Soils that are highly susceptible to water erosion are of concern. Once impaired, soils may be difficult to reclaim. Soils with surface textures that are highly susceptible to water erosion generally have a high proportion of fine sands or silts with little or no binding material. When the vegetation on these soils is removed, regardless of the disturbing agent, the soils are subject to erosion. Disturbance on these soils could result in erosion rates of 10 to 15 tons per acre per year. Areas susceptible to water erosion are shown in Map 18.

Prime Farmland

Prime farmland is of major importance in satisfying the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

About 4,000 acres (about .2 percent) of the area formerly known as the Henry Mountains Resource Area contain soil that meets the criteria for prime farmland (assuming that adequate water is available). Certain soils in the FPU could qualify as prime farmland if a dependable water supply were available in 7 out of 10 years. Currently a dependable supply is not available.

Soils of the Forest Planning Unit

Soils in the former FPU are described in the soil survey of the Emery County and Henry Mountains areas, which cover portions of Emery and Sevier counties, respectively. Some soils in the FPU are at or near their potential for producing vegetation and plant species composition of potential natural communities.

Salinity

The arid climate affects soil development in the FPU. Soils developed in alluvium, residuum, and eolian material contain little organic matter. Soils developed on marine formations are high in gypsum and other salts. High concentrations of these salts at or near the soil surface limit the types and amounts of vegetation present. These areas are also major diffuse sources of salt and sediment to the Colorado River system.

Badland and gypsum land, which are natural sources of large amounts of salt and sediment, often lack significant vegetation cover but frequently have a thin mantle of hard shale, rock fragments, or cryptogamic cover that provides some stability and helps prevent surface erosion. Surface disturbance in these areas may result in an increased potential for erosion.

Salt and sediment yield is of major concern in the Colorado River Basin, and erosion from public lands is an important source of sediment and associated salts in the area. Some of this is natural or results from relatively stable conditions in an arid or semiarid climate with periodic high-intensity storms. The actual contribution of salt and sediment yield to the total Colorado River Basin from drainages in the planning area is unknown.

Critical Soils/Soil Erosion Areas

Critical soils contain very highly saline soils and/or are very highly susceptible to water erosion. Critical soils encompass 9,040 acres in the FPU.

Critical watershed areas include soils that (1) have a high potential for salt yield, (2) are subject to severe water and wind erosion when disturbed, (3) have high runoff potential during storm events, (4) are subject to frequent flooding, or (5) have a potential for loss of vegetation productivity under high rates of wind or water erosion. Critical watersheds encompass 63,060 acres in the FPU.

Erosion Condition/Sediment Yield

Soils in the Muddy Creek Watershed are in the moderate erosion condition class. Any action that increases vegetation cover or improves soil structure will be beneficial, resulting in reduced erosion and increased vegetation surface litter.

Watershed and range studies show that the Sevier River Watershed is in the low to middle slight erosion condition class. Soils are generally well drained shallow to deep loams with sandy and clay textures. Runoff is slow to moderate. Permeability is rapid to moderately slow. Sediment production is low to moderate.

Soils of the Mountain Valley Resource Area

Soils in the area addressed by the Mountain Valley MFP, known as the former SRRA, are diverse, reflecting the influence of climate and geology. The soils are characterized by low organic matter content, and most have limited development and structure. Soils in the SRRA fall into eight of the broad soils groups described by Wilson and colleagues in Broad Soils Groups and Land Types of Utah (1975), which are meant as a general-purpose description.

Soil characteristics in the planning area are chiefly a product of the AAP received, historic vegetation cover, and parent material. Dominantly dark-colored soils (Mollisols and Aridisols) occupy alluvial fans, terraces, and hills in a belt above the planning area's valley floors. They receive an AAP of 30 to 35 cm (12 to 14 inches), most of which occurs as snow with extended dry periods during summer. Light-colored soils (Aridisols and Entisols) occupy the Sevier and San Pitch valleys. They are usually dry, with an AAP of 20 to 30 cm (8 to 14 inches).

Similar dark- and light-colored soils (Mollisols, Aridisols, and Entisols) are found in Piute County, with variations due to differences in elevation. In some valley areas, dominantly light-colored sodic-saline soils (Aridisols and Entisols) exist in valley bottoms and floodplains. These soils are strongly alkaline, although they can be used for range and wildlife habitat. Assorted land types of the Badlands-Rock Land Association are also found in the planning area.

Erosion Condition/Sediment Yield

Erosion conditions were identified using SSFs (which are no longer used) determined by field observations of soil movement, surface litter, pedestaling, surface rock, rills, flow pattern, and gullying. This showed that 3 percent of public lands in the planning area were in stable erosion condition, 34 percent were in slight erosion condition, 51 percent were in moderate erosion condition, 1 percent was in severe erosion condition, and 11 percent were in critical erosion condition.

In the Phase I watershed inventory, the planning area was divided into 17 watershed areas. Factors from the Pacific Southwestern Interagency Committee (PSIAC) Method (1968) were used to convert soil surface condition classes to sediment yield. Sediment yield in PSIAC was given the following ratings:

Ac. Ft./Sq. Mi./Yr	Rating Class
>3.0	Extreme/severe
1.0 – 3.0	Heavy/critical
0.5 – 1.0	Moderate/moderate
0.2 – 0.5	Slight/slight
<0.2	Negligible/stable

Table 3.11-1 shows the 17 watershed areas, their soil surface condition classes, and the conversion to sediment yield.

Table 3.11-1. Sediment Yields by Watershed Area—Mountain Valley Area

Watershed Area	Public Land (Acres)	% in Severe/ Critical Condition	Sediment Yield (ac.ft./sq.mi./yr.)	Average Annual Sediment Yield (acre-feet)
Aurora	10,002	--	1.72	27.0
Durkee	34,304	9	0.57	30.5
Fountain Green	7,482	0	0.55	6.4
Glenwood	34,017	12	0.94	50.2
Grass Valley	73,733	0	0.94	108.3
Junction	21,271	0	0.77	25.6
Kingston	35,190	40	1.78	97.8
Lost Creek	15,419	40	1.24	30.0
Manning Creek	18,855	11	0.73	21.5
Marysvale	10,127	50	1.89	30.0
Mayfield	24,075	18	0.88	33.0
Monroe	5,501	70	2.09	18.0
Plateau	6,084	0	0.20	1.9
Richfield	7,251	60	1.68	19.0
Salina	4,168	70	1.98	12.9

Watershed Area	Public Land (Acres)	% in Severe/ Critical Condition	Sediment Yield (ac.ft./sq.mi./yr.)	Average Annual Sediment Yield (acre-feet)
San Pitch	57,094	12	0.88	79.0
Valley Mountain	80,765	<1	0.59	75.0
Total	**445,338**			**666.1**

Source: BLM Planning Documents, 1979

The identified watersheds are in severe or critical erosion conditions for a variety of reasons. The following list identifies the reasons selected watersheds identified in the above table are in severe or critical erosion condition:

- More than 40 percent of public lands in the Lost Creek Watershed are in critical or severe erosion condition class, and a portion of that acreage is Arapien shale, which poses management limitations.
- Nearly 70 percent of the Monroe Watershed area is in critical erosion condition class. The Bertleson and San Canyon areas are primarily pinyon/juniper with some Big Sagebrush at lower elevations. Up to 60 percent bare ground is not uncommon.
- Twelve percent of the Glenwood Watershed area is in the severe or critical erosion condition class. Although some of the erosion is geologic in origin, it may be accelerated from improper use or management practices. A significant portion of Shadscale Hill and Greasewood Flat sub-watershed areas has been identified as in an apparent declining range trend and in poor range condition, possibly due to overutilization of forage and the resulting poor vegetation cover.
- Approximately 40 percent of the Kingston Watershed area is in critical erosion condition class. Approximately 3,200 acres of the Hodge Ranch and Dry Lake allotments have been identified as in an apparently declining range trend; these include a large portion of the Rocky Canyon and Rock Wash sub-watershed areas. Kingston Canyon is characterized by steep terrain and poor vegetation cover, is subject to intense thunderstorms, and is a source of sediment damage yearly and sediment load into the East Fork of the Sevier River.
- Nearly 50 percent of the public lands in the Marysvale Watershed area are in the critical erosion condition class. The west side of Marysvale Canyon is critically eroded and is characterized by steep terrain, bare rock ridges, talus slopes, sparse vegetation, and poor soils with a high degree of erosion susceptibility.
- Sixty percent of the Salina Watershed area is in the severe erosion condition class, and another 10 percent is in the critical erosion condition class. The Arapien shale hills are highly erosive and the entire watershed is primarily shadscale vegetal subtype with the percentage bare ground frequently 70–75 percent.
- Sixty percent of the public lands in the Richfield-Sevier Watershed area are in the critical or severe erosion class. The entire Flat Canyon allotment has been identified in a declining range trend, and the overutilization of forage will cause further deterioration of watershed conditions.
- Twelve percent of the San Pitch Watershed area, constituting nearly14,000 acres, is in the critical erosion class. Although only one small area was found to be critically eroded (Denmark Wash), there are large areas that are in a high moderate category that could become critical if not properly managed. Hayes Canyon, Swedes Canyon, and Lone Cedar Canyon are typical areas that are a source of flood flows and sediment damage annually.

Soils of the Henry Mountains Resource Area

The Henry Mountains area is very active erosionally. This area, along with the rest of the west, "ripped out" toward the end of the 1800s and early 1900s. Climatic events and heavy use, along with geologic features, resulted in major headcutting and channel formation that still affects large areas. The lower Fremont River "ripped out" during this period, and the channel was cut down 15 to 20 feet. The entire watershed is still in the process of coming to a new equilibrium and will be doing so for quite some time (Raisley 1990).

The soil resource in the Henry Mountains is composed of a wide variety of soil types and characteristics. Soils vary from desert sand on mesas in the arid climatic zone (5–8 inches AAP) to clay loam on mountain slopes in the humid climatic zone (20–25 inches AAP).

Soil inventory areas of the Henry Mountains are divided into two segments: (1) the Henry Mountains portion east of Capitol Reef National Park and (2) Parker Mountain and areas west of the park. The Soil Survey of Henry Mountains Area, Utah, issued February 1990, is the only official soil inventory in this area. Major fieldwork for this inventory was completed in 1979. This is a third-order soil survey, meeting the standards of the National Cooperative Soil Survey Program (NCSS) directed by the Soil Conservation Service (SCS). This survey is of moderate to moderately low intensity, providing data suitable for broad land use planning. Additional field investigation (survey enhancement) is required to obtain detailed site-specific soils information. The soil survey report contains descriptions of soil characteristics such as texture, depth, slope, salinity, etc., for the 124 soil map units that cover the survey area. The Parker Mountain area soil was surveyed by the SCS in 1969 and 1970. This survey identified soils of Wayne County according to their properties or associations. This survey found seven separate soil associations.

Salinity

The arid climate zones surrounding the Henry Mountains affect soil development in the Henry Mountains Resource Area. Soils developed on marine formations are high in gypsum and other salts. High concentrations of these salts at or near the soil surface limit the types and amounts of vegetation present. These areas are also major diffuse sources of salt and sediment to the Colorado River system.

Badland and gypsum land, which are natural sources of large amounts of salt and sediment, often lack significant vegetation cover but frequently have a thin mantle of hard shale, rock fragments, or cryptogamic cover that provides some stability and helps prevent surface erosion. Surface disturbance in these areas may result in an increased potential for erosion.

Salt and sediment yield is of major concern in the Colorado River Basin, and erosion from public lands is an important source of sediment and associated salts in the area. Some of this is natural or results from relatively stable conditions in an arid or semiarid climate with periodic high-intensity storms and an erosionally active geology. The actual contribution of salt and sediment yield to the total Colorado River Basin from drainages in the planning area is unknown.

Moderately and highly saline soils are of concern because of the need to prevent increases in salinity to the Colorado River system. Table 3.11-2 shows acreage by salinity class.

Table 3.11-2. Estimated BLM Acreage by Salinity Class—Henry Mountains

Salinity Class	Estimated BLM Acreage
Strongly Saline	249,282
Moderately Saline	120,372
Slightly Saline	75,976
Nonsaline	965,433
Total	**1,411,063**

Source: Henry Mountains Resource Area MSA

Soils in the Parker Mountain area are generally of volcanic origin and nonsaline. However, some small areas of saline soils do exist and will probably be mapped out in the future as the Loa-Marysvale soil survey is completed.

Critical Soils

Highly erodible soil areas have been identified for the Henry Mountains portion of the survey area. Acreages of soils susceptible to erosion by water are shown in Table 3.11-3.

Table 3.11-3. Water Erosion Ratings—Henry Mountains

Water Erosion Rating	Estimated BLM Acreage
High	358,523
Moderate	303,016
Low	444,528
Non	304,996
Total	**1,411,063**

Source: Henry Mountains Resource Area MSA

Acreages of soils for the Henry Mountains, by susceptibility to wind erosion, are shown in Table 3.11-4.

Table 3.11-4. Wind Erosion Ratings: Henry Mountains

Wind Erosion Rating	Estimated BLM Acreage
Very High	26,992
High	241,821
Moderate	602,439
Slight	24,116
Non	515,695
Total	**1,411,063**

Source: Henry Mountains Resource Area MSA

Soil erosion has been identified on the area located on the west side of Mt. Ellen proper just inside the Nasty Flat allotment boundary. The main factor contributing to this condition has been the overutilization of forage. This area has been given a critical soil erosion condition classification, and special management action has been taken. Major erosion control structures were placed throughout the Nasty Flat area during the 1980s. Gully plugs and gabions at road crossings on South Creek and other channels have controlled some of the major erosion that was occurring. This erosion control has been particularly effective on the gabioned road crossings.

Erosion Condition/Sediment Yield

Estimated sediment yield data for the Henry Mountains were obtained from a salinity and sediment yield study conducted in the Upper Colorado River Basin States by the USBR. A modified version of the

PSIAC method was used to estimate sediment yield. Estimated sediment production was mapped in the following ranges:

Ac. Ft./Sq. Mi./Yr	Rating Class
>3.0	Extreme/severe
1.0 – 3.0	Heavy/critical
0.5 – 1.0	Moderate/moderate
0.2 – 0.5	Slight/slight
<0.2	Negligible/stable

There is no Yield Class 6 in the Henry Mountains area. During September 1990, the Colorado River Basin Rangeland Salinity Project Team applied the PSIAC method to the Sweetwater Watershed. The team also considered a large portion of the Fremont River Basin (including the Factory Butte area), Bull Creek, Nasty Flat, and some of the Meadow Gulch area of the Dirty Devil River Basin. The resulting report showed that the watershed was in a stable condition. High sediment yield is occurring off the Badland portion, but this is natural geologic erosion from barren shale.

BLM personnel prepared sediment yield estimates for the Parker Mountain area. Three ratings were taken, one for the entire Parker Mountain area, one for the areas above the Narrows, and one for the areas below the Narrows. (The Narrows is a point near which Pine Creek joins the Fremont River, and which divides the unit into two segments.). The results of these ratings indicate that the entire unit sediment yield is about 0.6 acre-feet per square mile per year. The area above the Narrows (western portion of the unit) yields about 0.4 acre-feet per square mile per year. The area below the Narrows (eastern portion of the unit) yields about 2.5 acre-feet per square mile per year. The increased yield of the eastern region is due largely to physiographic conditions, forage overutilization, and climate.

The BLM studies show the whole Parker Mountain area to be in good condition with regard to erosion. According to the studies, 34 percent of the area is in stable erosion condition, 51 percent in slight erosion condition, 12 percent in moderate erosion condition, 1 percent in critical erosion condition, and 2 percent unclassified. The area above the Narrows is in good condition as well, with 36 percent classified as stable, 50 percent as slight, and 14 percent as moderate. However, the area below the Narrows is not in as good condition, with only 4 percent stable, 66 percent slight, 21 percent moderate, 9 percent critical, and no acres in the severe or unclassified erosion class. The area adjacent to Rabbit Valley contains the majority of the area classified as moderate. As mentioned above, the poorer erosion condition is probably due to physiographic conditions, forage overutilization, and climate.

Soils of the Cedar-Beaver-Garfield-Antimony Planning Area

Existing information on erosion problems in the Cedar-Beaver-Garfield-Antimony area is considered inadequate for activity planning purposes. Many erosion areas (such as those occurring on or near small perched aquifers) may not be identified. Known erosion areas need to be examined further and an effort made to identify undocumented erosion areas.

Soils—Issues and Opportunities

Issues raised during public scoping that relate to soils include the management of sensitive soils (i.e., soils on steep slopes, soils susceptible to severe wind and erosion, or soils that have been degraded from their potential by removal of stabilizing features) and impacts on cryptogamic soils. Erosion and the related salinity increases in the Colorado River system were also identified as an issue. In addition, it was noted that soil stabilization should be a priority for revegetation projects. This effort relates directly to the soil resources because attempting to control soil movement with physical structures on large areas may not be

very effective. In these instances, maintaining a good vegetation cover may be the best management measure.

Potential management decisions for these issues include maintaining or increasing soil productivity, preventing or minimizing accelerated erosion, and minimizing flood damage, as needed. In addition, soil productivity and vegetation cover should be maintained at or above the threshold needed to avoid exceeding the soil loss tolerance for critical soils. Various actions are used to meet these decisions. Soils may be protected by land use restrictions or other soil preserving measures. These may include, but are not limited to, the following:

- OHV restrictions in areas of sensitive soils
- NSO on sensitive soils
- Restriction on surface disturbing activities during critical watershed periods (i.e., spring runoff)
- Development of grazing exclosures around sensitive riparian zones and associated upland areas and implementation of prescribed grazing
- Installation of watershed structures to reduce and slow flows resulting from spring runoff
- Allowance for revegetation measures to retain soil, especially in riparian zones
- Allowance for the restructuring of streams to provide more sinuosity.

3.12 VEGETATION

As an integral component of multiple-use public land management, the condition of vegetation communities can be a limiting factor for other resources and resource uses. Soils management, livestock grazing, wildlife habitat, management of a natural fire regime, mineral development, and recreation can be affected by vegetation community condition. Managing the condition of vegetation communities is imperative for successful land use planning.

Vegetation—Current Land Use Plan Direction

Goals and objectives for vegetation management are not specifically addressed in any of the RMPs in place for the RFO. Rather, the goals are embedded in the management objectives for other resource areas, such as grazing, range, forest, and riparian and soils management. However, compliance with the Taylor Grazing Act of 1934 and the FLPMA § 102(a)(7) requires BLM to manage forage on a sustained yield basis to meet the following vegetation management objectives:

- Provide forage on a sustained yield basis through natural regeneration.
- Reverse the deterioration of grazing lands by improving those acres in poor condition to fair or good condition and those acres in fair condition to good condition within 20 years.
- Manage riparian areas to improve, preserve, and protect unique and high-value habitat characteristics. These characteristics include diverse plant species composition, plant species structural diversity, and adequate native vegetation cover and density for streambank stabilization.
- Continue managing rangelands to produce livestock forage and water, provided that critical soils, scenic values, and crucial wildlife habitat are protected.
- Protect the relict vegetation areas within the field office to provide an ecological baseline for range studies.
- Allow use of woodland and vegetation products in areas specified for this use.
- Preserve woodland products in other areas to meet RMP goals.
- Maintain vegetation cover at or above the level necessary to avoid exceeding the NRCS critical soils loss threshold in the critical soils areas.

Vegetation—Existing Management

This section gives a brief description of decisions that affect vegetation resources. Management decisions for livestock grazing, wildlife, special status species, and fire and fuels can change vegetation resources.

There is procedural guidance that describes vegetation management that is accomplished through wildlife and livestock utilization checks, vegetation trend analysis, livestock use reports, and climate data collection. The current method for measuring utilization is the key forage species method (BLM Technical Reference 4400-3 (1984)). Vegetation trends are determined at scheduled intervals at established study sites to assess riparian, livestock, and wildlife concerns. Plant species' density, frequency, and photo points are the most common methods used (BLM Technical Reference 4400-4 (1985)) to assess vegetation trends.

BLM Manual 6840 and 50 CFR provide the guidance and requirements for implementing management of special status species under the Endangered Species Act and BLM policy. The impacts of proposed actions are assessed for special status species. Management efforts for listed species are guided by the appropriate recovery plans. Some relict plant communities are protected and managed under designated ACECs (see Wilderness and Special Designations, Section 3.16).

Vegetation management projects are begun after completion of NEPA analysis. This includes clearances for archeology and special status species and preparing either an EA or an EIS. Vegetation management projects in which soil disturbance occurs require site rehabilitation.

The BLM definition of riparian areas is the "lands directly influenced by permanent water." These areas are characteristically limited to those along perennial and intermittent streams with vegetation dependent on free water in the soil. Riparian areas can include wetlands; however, within the RFO not all wetlands are in the riparian area. Wetlands can occur in areas where there is a sufficient amount of water for a time period adequate to establish vegetation dominated by hydrophytes. Although the FLPMA does not specifically mention riparian or wetland areas, several BLM rules address management and protection. A 1991 BLM initiative established national goals for wetland-riparian resources on public lands. This initiative included objectives for proper functioning conditions.

Vegetation—Resource Condition

A combination of climate, soils, and topography primarily determines the distribution of vegetation communities (or cover types) within the RFO. Water availability and soil composition are particularly important. Altitude changes between valley floors and plateau tops also affect vegetation; saline and alkaline soils greatly influence plant growth. Map 6 shows the general distribution of the nine major vegetation types and one cover type for nonvegetation areas in the RFO.

The primary plant communities within the RFO are desert scrub, pinyon/juniper woodlands, grassland, sagebrush, ponderosa pine, nonvegetation, mixed conifer, mountain shrub, oak, and aspen. Table 3.12-1 contains the acres and percentage of each vegetation community or cover type for BLM lands within the RFO. The east and west portions of the RFO have different amounts of the vegetation communities because of variations in elevation, soil, and topography. Desert scrub and grasslands dominate a greater percentage of the eastern portion of the RFO, whereas the western portion contains a greater percent of forest and woodlands.

Table 3.12-1. Vegetation Communities on Public Lands Within the Field Office

Vegetation Community	Richfield Field Office		East Portion		West Portion	
	Acres	%	Acres	%	Acres	%
Desert Scrub	726,085	34%	717,758	48%	8,327.29	1%
Pinyon/Juniper Woodland	550,889	26%	185,954	12%	364,935	57%
Grassland	461,546	22%	412,334	28%	49,211	8%
Sagebrush	209,271	10%	77,320	5%	131,951	21%
Ponderosa Pine[1]	42,425	2%	4,437	0%	37,988	6%
Nonvegetated	68,155	3%	55,874	4%	12,281	2%
Mixed Conifer	27,781	1%	13,798	1%	13,984	2%
Mountain Shrub	16,378	1%	8,028	1%	8,350	1%
Oak	19,629	1%	12,704	1%	6,925	1%
Aspen	5,785	0%	4,493	>1%	1,293	>1%
Totals	2,127,944	100%	1,492,700	100%	635,245	100%

Note: 1—Acres of ponderosa pine may be misidentified in the GAP data.

Source: Utah GAP data

The following paragraphs describe the vegetation cover types found within the RFO and the dominant species. These descriptions include location of the vegetation community, climate, other plant species, and potential wildlife habitat or livestock grazing use.

Desert Scrub

Desert brush constitutes the largest vegetation cover type on public land in the RFO. Approximately 725,000 acres, or approximately 34 percent of the RFO's vegetation cover, is desert brush. Most of the desert brush in the RFO (98 percent) occurs east of Capitol Reef National Park where it makes up nearly 48 percent of the vegetation cover. Salt shrub, greasewood, and blackbrush communities are combined for analysis purposes as desert scrub.

Salt Shrub

Areas of salt shrub are characterized by low-growing shrub communities, which frequently occur in saline-alkaline soils at lower elevations (4,800–6,000 feet). Poor drainage conditions and low precipitation (less than 8 inches annually) cause soil salts to accumulate in these lowlands, significantly affecting plant growth.

Dominant species are shadscale species (*Atriplex* spp.) and saltbush species (*Atriplex* spp.) These plants are considered halophytes, or salt-tolerant species. Shadscale is widely distributed, occurring both in basins and on steep, rocky slopes. Climax single species stands of mat saltbush are found on very salty, shallow soils. Some of these mat saltbush stands have no livestock grazing value. Shadscale and winterfat (*Ceratoides lanata*) are the probable climax dominants on moderately salty soils; shadscale is by far the more abundant, as a result of grazing. Galleta (*Hilaria jamesii*) and Indian ricegrass (*Oryzopsis hymenoides*) are the most important understory plants; both are salt tolerant, but galleta's competitive advantage, aided by continual spring grazing, has resulted in its increase and a decrease in Indian ricegrass.

Greasewood

The greasewood vegetation cover type is found mainly on valley floors, bottomlands, and floodplains of perennial and intermittent streams where salty water tables are available at least part of the year. Black greasewood (*Sarcobatus vermiculatus*) is the main species in this type. Other salt-tolerant plants associated with this type are tamarisk (*Tamarix chinensis*), shadscale (*Atriplex confertifolia*), alkali sacaton (*Sporobolus airoides*), and desert saltgrass (*Distichlis spicata*). Also found are rabbitbrush (*Chrysothamnus* spp.) and galleta (also known as curlygrass).

Blackbrush

The blackbrush vegetation type, dominated by blackbrush (*Coleogyne ramosissima*), occurs along desert mesas and foothills in warm desert shrub communities. It is locally abundant and forms nearly pure stands, normally in shallow sandy to clay gravelly soils. Other vegetation species of the blackbrush type occurring in the area include singleleaf ash (*Fraxinus anomala*) and hopsage (*Grayia spinosa*). These areas also support stands of forage species, such as Mormon tea (*Ephedra* spp.), Indian ricegrass, and galleta, which are useful for livestock grazing in fall, spring, and winter. In general, cattle do not eat blackbrush itself if other forage is available. Mule deer and bighorn sheep eat blackbrush in the winter, and small mammals and birds consume blackbrush seeds.

Pinyon/Juniper Woodland

Pinyon/juniper woodlands generally exist at elevations of between 6,000 and 8,000 feet within the area. The lowest boundary coincides with a cold inversion layer and low annual precipitation (10 inches). The perimeter, or ecotone, of the pinyon/juniper type comprises a mixed association of shrubs, such as sagebrush or grassland/sagebrush. Cold temperatures late into the spring tend to limit pinyon/juniper forests to elevations below 8,000 feet. Pinyon and pinyon/juniper vegetation cover comprises more than 550,000 acres, or about 25 percent, of the vegetation on public land in the RFO. Of the total

pinyon/juniper acreage, 66 percent occurs west of Capitol Reef National Park. Throughout the Mountain Valley area, pinyon/juniper forests dominate the public land, comprising more than 55 percent of the total vegetation cover.

The dominant species of the pinyon/juniper woodlands are the Utah juniper (*Juniperus osteosperma*) and the pinyon pine (*Pinus edulis*). The most common understory shrubs are sagebrushes (*Artemisia* spp.) and Mormon tea. Other shrubs include rabbitbrush, broom snakeweed (*Gutierrezia sarothrae*), serviceberry (*Amelanchier* spp.), and cliffrose (*Cowania mexicana*). Major grasses are galleta (or curlygrass), blue grama (*Bouteloua gracilis*), Indian ricegrass, and sand dropseed (*Sporobolus cryptandrus*).

Soils in this vegetation community are typically shallow and rocky. The pinyon/juniper woodlands are limited at lower elevations because of low precipitation, high temperatures, and salty soils. Stands vary from dense to sparse canopy closure with shrub and grass understory. The stands with low canopy closure provide a greater amount of forage for livestock and wildlife. Pinyon and juniper trees out-compete other vegetation in the use of moisture and, at climax, less understory remains.

Grassland

Grasslands cover approximately 460,000 acres (more than 20 percent) of the total vegetation cover on public land in the RFO. Grasslands include both desert and semidesert areas, consisting primarily of perennial grasses intermixed with sub-shrubs, occasional shrubs, and annual grasses. More than 85 percent of these grasslands (about 412,334 acres) occur in the eastern portion of the RFO. Grass communities occupy much of the same climatic and elevation zones as does the sagebrush and pinyon/juniper community, with the grasslands occupying the lower elevations with 8–10 inches of precipitation annually.

The dominant grass species are Indian ricegrass, galleta, and blue grama. Other grasses include sand dropseed, threeawn species (*Aristida* spp.), needle-and-thread (*Stipa comata*), squirreltail (*Sitanion hystrix*), and western wheatgrass (*Agropyron smithii*). Other common plants are shadscale, fourwing saltbush (*Atriplex canescens*), Mormon tea, black sagebrush (*Artemisia nova*), low sagebrush (*Artemisia arbuscula*), rabbitbrush, winterfat (*Ceratoides lanata*), and snakeweed (*Gutierrezia* species).

Sagebrush

In general, sagebrush occurs on the drier portions of the pinyon/juniper zone and the wetter fringes of the salt shrub zone at elevations between 5,400 and 7,800 feet. Annual precipitation in these areas ranges from 8 to 15 inches. Sagebrush communities comprise more than 200,000 acres of public land in the RFO, with 63 percent of the total sagebrush acreage occurring in the Mountain Valley area. Sagebrush comprises approximately 20 percent of the vegetation cover on public land west of Capitol Reef National Park. East of the park, including the former FPU, sagebrush totals just over 77,000 acres, or about 5 percent of the total vegetation cover.

The major sagebrush species are big sagebrush (*Artemisia tridentate var. tridentate*), Wyoming sagebrush (*Artemisia tridentata Wyomingensis*), and bigelow sagebrush (*A. bigelovii*). Big sagebrush tends to occupy deeper soils, north and northeast exposures of snow accumulation, and other sites favoring soil moisture accumulation. The low-growing forms of sagebrush occupy the more shallow soils, south and west exposures, and sites with less moisture accumulation. Several varieties of rabbitbrush (*Chrysothamnus viscidiflorus*, *C. viscidiflorus stenophyllus,* and *C. nauseosus*) grow in association with sagebrush or in pure stands within the sagebrush type, dominating those sites where disturbance from fire, cultivation, heavy grazing, etc., has reduced sagebrush cover.

Other species found are bird sagebrush (*A. spinescens*) and fringed sagebrush (*A. frigida*). Other common plants that grow with sagebrush include shadscale, rabbitbrush, broom snakeweed (*Gutierrezia sarothrae*), galleta, blue grama, Indian ricegrass, and needle-and-thread grass.

Ponderosa Pine

Ponderosa pine (*Pinus ponderosa*) occupies somewhat rockier, steeper, and cooler sites and tends to form open forests of medium to tall trees. This community is extensively developed on Mt. Hillers, encircling the mountain and extending nearly to the summit on drier slopes. A comparable, although less extensive, area occurs on Mt. Pennell. In areas above 8,500 feet, in most of the mesic drainages and in areas where snowbanks are persistent, a dense mixed forest dominated by Douglas fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), and aspen (*Populus tremuloides*) has developed. There are also areas of subalpine forest dominated by Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*), and a subalpine grassland dominated by species of blue grass and fescue. Limber pine (*Pinus flexilis*) and bristlecone pine (*Pinus longaeva*) occasionally occur on rocky, exposed sites, and small groves of aspen occupy protected niches.

Nonvegetation

Urban, developed agriculture, water, sand, bare rock, and salt flats areas are included in the nonvegetation community. This community contains about 68,000 acres (approximately 3 percent of the RFO). The eastern portion of the RFO contains about 55,874 acres (81 percent) of the total nonvegetation community. The majority of this nonvegetation in the field office is sand, bare rock, salt flats, or playas.

Mixed Conifer

Mixed conifer and mountain brush are two major vegetation types developing mostly at elevations between 8,000 and 9,000 feet. However, the zone descends to 7,000 feet on north-facing drainages and is as high as 10,000 feet on the dry south slopes of Mt. Hillers and Mt. Pennell. Mixed conifer, including ponderosa pine, comprises more than 50,000 acres of public land.

Tree species in mixed conifer areas are white spruce, Douglas fir, white fir, subalpine fir, and lodgepole pine (*Pinus contorta*). On some aspects and elevations, ponderosa pine, limber pine, or bristle cone pine (*Pinus aristata*) may occur. This cover type is located in the northwestern and northeastern portion of the RFO.

Mixed conifer stands provide cover and nesting habitat for a variety of wildlife species. Understory vegetation and vegetative structure play important roles in determining use by big game and livestock. Generally, open stands of mixed conifer with a grass and forb understory provide higher value habitat for livestock. Closed mixed conifer stands provide habitat for small mammal and rodents, which are a food source for birds of prey.

Mountain Brush

Mountain brush comprises around 36,000 acres of public land in the RFO, with more than 50 percent located near the Henry Mountains. In the RFO, mountain shrubs may form a distinct belt on mountain slopes and ridge tops above pinyon/juniper woodlands. These communities are usually found at elevations between 5,000 and 7,000 feet. The mountain shrub community exhibits a mosaic pattern of several co-dominant shrub species distributed across a diverse landscape.

The scrub oak-mixed mountain brush community is dominated by both Gambel's oak (*Quercus gambelii*) and bigtooth maple (*Acer grandidentatum*). Other plant species associated with mountain shrub include mountain mahogany (*Cercocarpus* spp.), scrub oak (*Quercus* spp.), bigtooth maple, antelope bitterbrush

(*Purshia tridentata*), Stansbury cliffrose (*Purshia mexicana var. stansburiana*), mountain big sagebrush (*Artemisia tridentata ssp. vaseyana*), pachistima (*Pachistima myrsinities*), ninebark (*Physocarpus malvaceus*), ceanothus (*Ceanothus* spp.), serviceberry, chokecherry (*Prunus virginiana*), bitter cherry (*Prunus emarginata*), and snowberry (*Symphoricarpos* spp.) (USFS 2004).

Mountain shrub communities provide valuable forage and browse for big game species and livestock. Some species, such as serviceberry, provide a valuable food source for birds, including sage grouse.

Oak

In the RFO, Gambel's oak is the dominant species on south-facing slopes at elevations from 6,500 to7,800 feet (Harper et al., 1985). Other species associated with Gambel's oak are fir species (*Abies* spp.), maple species (*Acer* spp.), Utah serviceberry (*Amelanchier utahensis*), and sagebrush.

Oak woodlands provide food and shelter to numerous wildlife species. Gambel's oak is a major forage species for deer and elk (Mower et al., 1989), and the acorn crop provides a major food source for Merriam's turkeys (USFS 2004). Mule deer use oak woodlands during the winter for browse and cover, although use is greatest when the average tree height is less than 15 feet (USFS 2004).

Aspen

Aspen comprises more than 5,000 acres of vegetation cover, approximately 75 percent of which is in and around the Henry Mountains. Deciduous forests, principally dominated by quaking aspen (*Populus tremuloides*), are located in the northeastern and northwestern portions of the RFO. Containing some coniferous species, this cover type is located at slightly lower elevations than is mixed conifer. Conifer species associated with aspen stands include ponderosa pine, Douglas-fir, and spruce species (*Picea* spp.). Aspen is a transitional or ephemeral vegetation cover type and changes over time. Unless there is a disturbance such as fire or logging, the aspen vegetation type is replaced by the mixed conifer type.

Quaking aspen forests provide important breeding, foraging, and resting habitats for a variety of birds and mammals. Wildlife and livestock use of quaking aspen communities varies with species composition of the understory and relative age of the quaking aspen stand. Young stands provide the most browse for big game and livestock. Quaking aspen buds, catkins, and leaves provide an abundant and nutritious yearlong food source for ruffed grouse.

Riparian

Riparian communities are identified by the presence of numerous willow species (*Salix* spp.), mesic deciduous trees such as cottonwoods (*Populus fremontii* and *P. angustifolia*), aspen and water birch (*Betula occidentalis*), sedges (*Carex* spp.), rushes (*Juncus* spp.), and numerous grasses and forbs. Some wetland areas occur; these are composed of saltgrass, alkali sacaton, cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), and common reed (*Phragmites australis*).

Riparian vegetation within the RFO is confined primarily to wet-bottomlands or lands with a water table relatively close to the surface and to vegetation along live stream courses and the bottoms of flood washes. Most of the lands occupied by riparian vegetation are under private ownership. The most extensive areas of riparian vegetation on public lands are those found along the Fremont River as it flows east to Capitol Reef National Park from the Torrey-Grover road crossing, the small strips of land along stream courses feeding the Fremont River from West Boulder Mountain, and Sulphur Creek-Sand Creek draining the south slopes of Thousand Lake Mountain. BLM has been inventorying the riparian and wetland areas on public land throughout the RFO. At the end of September 2002, BLM had inventoried 398 miles of lotic riparian/wetland resources (flowing water such as creeks and streams) on public land in the RFO. In addition, 1,178 acres of lentic riparian/wetland resources (standing water resources, such as

seeps and springs) were inventoried. Although the riparian/wetland inventory is not complete for public lands in the RFO, the areas (miles and acres) inventoried already exceed the total estimate before the inventory. In other words, the inventory is finding more riparian/wetland resources than initially anticipated.

Special Status Plant Species

Special status species of plants occur on public land within the RFO. Special status designations are assigned for many reasons, including limited distributions, habitat losses resulting from environmental impacts, suspected or documented population declines, or some combination of these factors. Federally listed (i.e., Threatened or Endangered) and special status plant species for the RFO are shown in Table 3.12-2. The listings are used to prioritize BLM survey efforts.

Table 3.12-2. Special Status Plant Species—Richfield Field Office

Common Name	Scientific Name	Status
Wright's fishhook cactus	*Sclerocatus wrightiae*	Endangered
Barneby's reed mustard	*Schoencrambe barnebyi*	Endangered
San Rafael pediocactus	*Pediocatus despanii*	Endangered
Winkler's pediocactus	*Pediocactus winkleri*	Threatened
Last Chance Townsendia	*Townsendia aprica*	Threatened
Maguire daisy	*Erigeron maguirei*	Threatened
Alice's wonder flower	*Alicellia caespitosa*	Candidate
Utah phacelia	*Phacelia utahensis*	Sensitive
Barestem greenthread	*Thelesperma windhamii*	Sensitive
Basalt milkvetch	*Astragalus subcinereus var. basalticus*	Sensitive
Pinnate spring parsley	*Cymopterus beckii*	Sensitive
Hole-in-the-Rock prairie-clover	*Dalea flavescens var. epica*	Sensitive
Cronquist wild buckwheat	*Eriogonum corymbosum var. cronquistii*	Sensitive
Smith wild buckwheat	*Eriogonum corymbosum var. smithii*	Sensitive
Utah spurge	*Euphorbia nephradenia*	Sensitive
Cataract gilia	*Gilia latifolia var imperialis*	Sensitive
Mussentuchit gilia	*Gilia tenuis*	Sensitive
Alcove bog-orchid	*Habenaria zothecina*	Sensitive
Greenwood's goldenbush	*Haplopappus lignumviridis*	Sensitive
Claron pepperplant	*Lepidium montanum var. claronense*	Sensitive
Utah phacelia	*Phacelia utahensis*	Sensitive
Jane's globemallow	*Sphaeralcae janeae*	Sensitive
Psoralea globemallow	*Sphaeralcae psoraloides*	Sensitive
Alpine greenthread	*Thelesperma windhamii (T. subnudum var. alpinum*	Sensitive
Sigurd Townsendia	*Townsendia jonesii var. lutea*	Sensitive

Noxious and Invasive Weeds

The Utah Noxious Weed Act defines a noxious weed as any plant that is determined by the Commissioner of Agriculture to be especially injurious to public health, crops, livestock, land, or other property. Seventeen species have been designated as state noxious weeds, and 15 have additionally been classified as new and invading weeds that have the potential to become noxious weeds. The state noxious weed list is presented in Table 3.12-3.

Table 3.12-3. Utah Noxious Weed List

Common Name	Scientific Name
Bermudagrass	*Cynodon dactylon*
Canada thistle	*Cirsium arvense*

Common Name	Scientific Name
Diffuse knapweed	*Centaurea diffusa*
Dyers woad	*Isatis tinctoria*
Field Bindweed (Wild Morning Glory)	*Convolvulus arvensis*
Hoary cress (small whitetop, whitetop)	*Cardaria draba*
Johnsongrass (Perennial sorghum)	*Sorghum halepense*
Leafy spurge	*Euphorbia esula*
Medusahead	*Taeniatherum caput-medusae*
Musk thistle	*Carduus nutans*
Perennial pepperweed (tall white-top)	*Lepidium latifolium*
Purple loosestrife	*Lythrum salicaria*
Quackgrass	*Agropyron repens*
Russian knapweed	*Centaurea repens*
Scotch thistle	*Onopordum acanthium*
Spotted knapweed	*Centaurea maculosa*
Squarrose knapweed	*Centaurea squarrosa*
Yellow star thistle	*Centaurea solstitialis*

Source: State of Utah Department of Agriculture and Food

In addition to the list generated by the State of Utah, each county weed control board has the authority to develop its own list. Table 3.12-4 lists weeds designated as noxious in any of the five counties within the RFO.

Table 3.12-4. County Noxious Weeds—2003

Common Name	Scientific Name	County Listed
Black henbane	*Hysocyamus niger*	Sanpete
Houndstongue	*Cynoglossum officinale*	Sanpete
Russian Olive	*Elaeagnus angustifolia*	Sevier, Wayne
Velvetleaf	*Abutilon theophrasti*	Sanpete

Source: State of Utah Department of Agriculture and Food

The Utah BLM has designated several other invasive plants as new and invading weeds. These plants, while not listed by the State or any of the five counties, are identified based on their potential to invade and potentially alter plant communities in the RFO. Table 3.12-5 identifies these species.

Table 3.12-5. Utah BLM New and Invading Weeds

Common Name	Scientific Name
Black henbane	*Hyoscyamus niger*
Camel thorn	*Alhagi camelorum*
Dalmatian toadflax	*Linaria dalmatica*
Goatsrue	*Galega officinalis*
Jointed goatgrass	*Aegilops cylindrica*
Poison hemlock	*Conium maculatum*
Purple starthistle	*Centaurea calcitrapa*
Silverleaf nightshade	*Solanum elaeagnifolium*
St. Johnswort	*Hypericum perforatum*
Velvetleaf	*Abutilon theophrasti*
Water hemlock	*Cicuta douglasii* (*C. maculata*)
Wild proso millet	*Panicum miliaceum*
Yellow nutsedge	*Cyperus esculentus*
Yellow toadflax	*Linaria vulgaris*

Source: BLM

Finally, RFO has identified four species in addition to the State, county, and State office BLM plants. These additional species are known, at the field office level, to cause problems within the local plant communities:

- Puncture vine, which is also known as Goat's head (*Tribulus terristris*)
- Salt cedar, which is commonly referred to as tamarisk (*Tamarix chinensis* or *T. ramosissima*)
- Small flowered tamarisk (*Tamarix parviflora*)
- Buffalobur (Solanum rostratum).

Changes to the above lists may be made as new plant species become problems. It should be noted that a species' absence from the above lists does not mean that the species is not considered in management decisions. For example, even though cheatgrass (*Bromus tectorum*) is not identified in any of the above lists, its potential to invade or expand within an area is considered in activity-level planning.

Vegetation—Issues and Opportunities

Since the completion of the six LUPs, management of vegetation for forage, watershed benefit, or special status plant species has changed. Issues to be considered include the following:

- The six LUPs do not address desired future condition for vegetation. The new RMP should identify the desired future condition.
- The use of key species should be identified and evaluated for quantifying impacts of grazing on forage plants.
- Appropriate utilization levels of key species should be identified.
- In consultation with the USFWS, the list of Federally protected plants should be updated for the new RMP. Criteria should be established for keeping this list current for newly listed species or critical habitat through plan maintenance.
- The analysis should use current and new science for the protection and management of special status plants. It should also evaluate needs for new data regarding amount, distribution, and habitat requirements for special status plant species.
- The plan regarding current recovery plans, conservation agreements, and biological opinions developed throughout the RFO should be updated. Actions identified in recovery plans for listed species and protection of critical habitat should be implemented.
- The six LUPs do not address management of noxious weeds and invasive species. The new RMP should establish integrated pest management criteria in light of current policy and laws for management of these species.
- Integrated management criteria for insect pest control should be developed.
- Through plan maintenance, criteria should be established for transplanting or augmenting populations under BLM Manual 1745.
- Criteria and methods for identifying appropriate areas and quantities for seed collection and live plant harvest should be established.
- A method of identifying Christmas tree, post and pole, and fuel wood cutting areas should be determined.

Fuel wood management should be tied to appropriate vegetation management.

3.13 VISUAL RESOURCES MANAGEMENT

The FLPMA states, "...public lands will be managed in a manner which will protect the quality of the scenic (visual) values of these lands." BLM accomplishes this through VRM, a system that involves inventorying scenic values and establishing management objectives for those values through the resource management planning process, and then evaluating proposed activities to determine whether they conform to the management objectives. This section addresses VRM in the RFO.

Visual Resources Management—Current Land Use Plan Direction

Forest MFP, 1977

- Maintain present VRM class ratings in all areas and preserve important sightseeing values within the unit.

Mountain Valley MFP, 1981

- Maintain the existing visual resource qualities of the Mountain Valley Planning Area.

Henry Mountains MFP, 1982

- Designate VRM classes for all lands in the resource area.

Parker Mountain MFP, 1983

- Maintain the existing visual resource qualities of the Parker Mountain Planning Unit.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Plan, modify, and implement resource management activities in a manner that will minimize the impacts on visual resources. Apply special emphasis in environmental assessment and project design to projects in the scene area (foreground visual zone) to meet VRM objectives.

Visual Resources Management—Existing Management

VRM provides a mechanism for protecting the spectacular visual setting of the RFO, while allowing for other uses. Protecting the visual resources within the RFO is important because the area's scenery is valued by users of the area and can be negatively affected by some uses. The RFO contains a broad range of visual settings, ranging from mountain landscapes and steep canyons, to agricultural settings, to desert. Human-caused changes to the geologic and biotic features of the landscape can also add to or detract from scenic value. The FLPMA requires that the public lands be managed in a way that will protect the quality of these scenic values. Levels of management vary by area, resource, and use.

Visual quality is an important factor in land use decisionmaking to prevent environmental degradation and maintain sociologically important resource values. Public perception of and concern for visual resources is critical in land use planning. The visual character of the RFO is valuable to a spectrum of users and sightseeing travelers. Designation and management of VRM classes allows BLM to control surface disturbing uses in a manner consistent with natural features and existing uses throughout the RFO.

BLM's VRM system consists of two stages:

1. Inventory (visual resource inventory)
2. Analysis (visual resource contrast rating).

The inventory stage involves identifying the visual resources of an area and assigning them to inventory classes using BLM's visual resource inventory process. This process is described in detail in BLM Handbook H-8410-1, Visual Resource Inventory. The analysis stage involves determining whether the potential visual impacts from proposed surface disturbing activities or developments will meet the management objectives established for the area or whether design adjustments will be required. This process is described in BLM Handbook H-8431-1, Visual Resource Contrast Rating. VRM classes are assigned to areas based on the combination of scenic quality, visual sensitivity, and distance zones. VRM Classes I–IV range from completely natural landscapes to landscapes containing extensive human modification. Visual values are considered throughout the RMP process, and the area's visual resources are then assigned to management classes with established objectives:

- **Class I Objective.** To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II Objective.** To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.
- **Class III Objective.** To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.
- **Class IV Objective.** To provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.
- **Rehabilitation Areas Objective.** Areas in need of rehabilitation should be flagged during the inventory process. The level of rehabilitation will be determined through the RMP process by assigning the VRM class approved for that particular area.

Management of VRM in WSAs may differ from what the existing LUPs show. The BLM's VRM manual stipulates that Class I covers special areas in which the management situation requires a natural environment essentially unaltered by man. This definition addresses WSAs.

Visual Resources Management—Resource Condition

Visual resource inventories were competed before each of the planning efforts for the existing LUPs. These inventories were used to generate the existing VRM classifications for the RFO. The small portion of public land in Garfield County between the Dixie National Forest and the Wayne County boarder was not inventoried for visual resources in previous planning efforts. In July 2003 this area was inventoried for the current planning process. Existing VRM designations are shown on Map 3. VRM classes from the existing LUPs are as follows:

Henry Mountain MFP

- No areas are designated as VRM Class I.
- North and South Caineville Mesa are designated as VRM Class II.
- Starr Creek Benches are designated VRM Class III.
- The portions of the San Rafael Desert, Antelope Valley, The Spurs, and Hatch Canyon that are in the foreground distance zone are designated as VRM Class III.
- VRM classes for the remainder of the resource area are determined by the VRM system.

Parker Mountain MFP

- Fish Creek Cove and Fremont River Gorge are designated as VRM Class II.

- Other areas within the Parker Mountain Planning Area, as shown on Mylar overlays, are designated as Class III.
- Class IV areas also exist within the Parker Mountain Planning Area and are also shown on Mylar overlays.

Mountain Valley MFP

- Marysvale Canyon, Kingston Canyon, the Parker Escarpment, and the Utah Highway 24 corridor are designated as VRM Class II.
- The Mountain Valley MFP identifies 172,000 acres as VRM Class III and 270,000 acres of the planning area as Class IV.

Cedar-Beaver-Garfield-Antimony MFP

- The MFP identifies 68,600 acres as VRM Class II, 102,400 acres as Class III, and 900,400 acres as Class IV.
- A small portion of the RFO falls within the VRM classes designated in the Cedar-Beaver-Garfield-Antimony MFP.

Forest MFP

- The Forest MFP identifies VRM designations within "visual corridors" along Highways 10 and 72 as well as Interstate 70, but these are not available in GIS format.

The designations in each LUP may be outdated because of changed resource conditions and improved mapping capability. Changes in resource conditions in the RFO may include new facilities and increased visitation in viewing areas. Visitors may also have developed increased sensitivity to visual contrasts and landscape changes. The entire RFO needs a contiguous set of VRM assessments and designations.

Visual Resources Management—Issues and Opportunities

VRM issues that must be addressed include surface disturbance caused by other resource uses, including recreation, mineral development, rights-of-way, and grazing developments within scenic corridors. Some specific issues identified through internal and public scoping include the following:

- Not all public lands in the RFO have been assigned a VRM classification. This process should ensure that all public lands are assigned a VRM classification.
- VRM must consider changes that have taken place within the RFO since the implementation of current RMPs and the widespread implementation of VRM.
- WSAs must be updated to VRM Class I from their current Class II–IV designations.
- Management of the areas may not be consistent with VRM designations. This is an issue specifically along the Scenic Highways and Byways.
- The interrelationship between air quality and VRM should be coordinated in the new RMP.

3.14 WATER

BLM manages the water resource for multiple use within the framework of applicable laws, regulations, and agency policies, as long as certain cultural resource values, certain scenic values, certain wildlife habitats, certain vegetation values, and critical soils are protected and as long as existing livestock, wild horse and burro, and mineral uses are maintained where they do not conflict with other listed goals.

It shall be the intent of BLM that the water quality of streams and rivers leaving BLM-managed lands shall be of the same as, or better than, the quality of those same waters leaving BLM-administered lands.

Water—Current Land Use Plan Direction

The extensive goals and objectives in the current LUPs can be boiled down to the following general management directions:

- Improve the vegetation cover; restore, maintain, and improve soil productivity; reduce and prevent accelerated erosion; and enhance on-site resource uses
- Maintain and improve surface water and groundwater quality for both on- and off-site uses
- Reduce SSFs by a specific amount in each of the watersheds. (Note: SSFs are no longer used by the RFO.)
- Use intensive grazing system to lower erosion.
- Reduce annual sediment yield from public lands.

These general directions are expanded to specific objectives that, depending on the LUP, address specific watersheds. It should be reiterated that soil surface factors are no longer used to manage watersheds in the RFO.

Forest MFP, 1977

Watershed—Unit-Wide

- Improve the vegetation cover; restore, maintain, and improve soil productivity; reduce and prevent accelerated erosion; and enhance on-site resource uses, attain an SSF rating of 40 on 50,000 ± acres and maintain an SSF rating of 30–35 on 44,000 ± acres within 15 years.
- Maintain and improve surface water and groundwater quality for both on- and off-site uses, reduce sediment production by 25 percent.

Muddy Creek Watershed

- Through intensive grazing systems, obtain an SSF of at least 40 (high slight erosion condition class).

Sevier River Watershed

- Through grazing management systems, attain a future SSF of 20. This is a stable erosion condition class.

Mountain Valley MFP, 1981

Lost Creek Watershed

- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under the column heading “Proposed Reduction in SSF with W.S. [Watershed] Treatment”:

Table 3.14-1. Lost Creek Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
Little Lost Creek	1,200	73	69
West Lost Creek	1,800	61	58
Tiperary	11,210	67	63

- Reduce average annual sediment yield from public lands in the Lost Creek Watershed area from 30 acre-feet to 25 acre-feet within the next 25 years.

Monroe Watershed

- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under the column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-2. Monroe Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
Bertleson Canyon	5,420	76	70
East Annabella	1,550	63	58

- Reduce average annual sediment yield from public lands in the Monroe Watershed area from 18 acre-feet to 16 acre-feet within the next 25 years.

Glenwood Watershed

- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-3. Glenwood Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
East Sigurd	119	73	68
Twist Canyon	46	71	65
East Black Knoll	1,310	63	60
Shadscale Hill	314	69	64
Mill Canyon	652	62	56

- Reduce average annual sediment yield from public lands in the Glenwood Watershed from 50.2 acre-feet to 44.0 acre-feet within the next 25 years.

Kingston Watershed

- Reduce the soil erosion from an average SSF for the entire Kingston Watershed from 59 to 53 within the next 25 years. Attempt to reduce SSFs from critical erosion condition class to moderate.
- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-4. Kingston Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
Rocky Canyon	3,317	70	64
Rock Wash	2,677	63	59

- Reduce average annual sediment yield from public lands in the Kingston Watershed from 97.8 acre-feet to 90 acre-feet within the next 25 years.

Marysvale Watershed

- Reduce the soil erosion from an average SSF for the entire Marysvale Watershed from 60 to 56 within the next 25 years. Reduce the SSFs from the critical erosion condition class.
- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under the column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-5. Marysvale Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
Candy Mountain	4,257	71	68
Dry Wash Creek	947	75	69

- Maintain the average annual sediment yield at less than 30 acre-feet per year for the next 25 years.

Aurora Watershed

- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under the column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-6. Aurora Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
Ezra's Flat	7,894	66	61
West Sigurd	1,172	69	65

- Reduce average annual sediment yield from public lands in the Aurora watershed within the next 25 years.

Salina Watershed

- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under the column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-7. Salina Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
Salt Gap	547	67	64
Black Gap Mtn.	2,732	86	82
Trunk Canyon	547	95	87

- Reduce average annual sediment yield from public lands in the Salina Watershed from 12.9 acre-feet to 12 acre-feet within the next 25 years.

Richfield Watershed

- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under the column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-8. Richfield Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
So. Skinner Canyon	210	62	58
East Flat Canyon	1,720	63	60
Cottonwood Canyon	1,590	67	62

- Reduce average annual sediment yield from public lands in the Richfield-Sevier Watershed from 19 acre-feet to 16 acre-feet within the next 25 years.

San Pitch Watershed

- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under the column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-9. San Pitch Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
Axhandle Canyon	4,290	63	59
Left Hand Fork	2,485	63	58
Rock Canyon	860	62	56
Dry Canyon	1,805	62	56
Timber Canyon	737	64	59
Maple Canyon	960	66	62

- Reduce average annual sediment yield from public lands in the San Pitch Watershed from 79 acre-feet to 70 acre-feet within the next 25 years.

Valley Mountain Watershed

- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under the column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-10. Valley Mountain Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
Denmark Wash	410	69	64

- Reduce annual sediment yield from 75 acre-feet to 70 acre-feet.

Mayfield Watershed

- Reduce the SSFs in the following sub-watershed areas to the SSFs shown under the column heading "Proposed Reduction in SSF with W.S. Treatment":

Table 3.14-11. Mayfield Watershed Proposed Reduction in Soil Surface Factor

Sub-Watershed Area	Acreage	Present SSF	Proposed Reduction in SSF with W.S. Treatment
Willow Creek	571	67	62
Twist Canyon	1,390	67	63

- Reduce average annual sediment yield from public lands in the Mayfield Watershed area from 33 acre-feet to 29 acre-feet within the next 25 years.

Additional Objectives

- Manage the Manning Creek, Junction, Durkee, Grass Valley, and Fountain Green Phase I Watershed areas as is to maintain SSFs and sediment yield rates at their present values or lower them. This includes about 160,000 acres.

Watershed-Unit Wide

- Restore, maintain, improve, and quantify water quality and yield for both on- and off-site uses.
- Meet State and Federal water quality standards and comply with State 208 Best Management Practices.

Henry Mountains MFP, 1982

- Improve those watershed and soil condition classes that can be improved by at last one condition class over the next 10 to 20 years.
- Stabilize the developed gullies and restore and maintain the vegetation on the steep slopes on the east side of the Nasty Flat allotment.
- Reduce the stream flow velocity, stabilize the streambed, and reduce the current rate of streambank erosion in the Bull Creek drainage.
- Reduce and control flood and sediment damage, both on and off public lands (BLM Manual 1603.E3(c)).
- Reduce the risk of flood loss and minimize the impacts of floods on human safety, health, and welfare.
- Reduce the loss of soil from the Meadow Gulch site into the Dirty Devil River and subsequently into Lake Powell. In addition, the productivity of the gulch above the headcut can be improved considerably.

Parker Mountain MFP, 1983

- Reduce the soil erosion on 7,500 acres of public land in the Torrey Watershed from a moderate (41–60 SSF) classification.
- Increase and improve watershed data for the Parker Mountain Planning Unit.
- Long-term objectives are to ensure the protection and preservation of water supply requirements for all BLM resource uses through an acceptable recording system (BLM Manual 1603 E.3(d)).

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Improve watershed conditions on areas identified with significant erosion condition problems and on other sensitive watershed areas (riparian areas).
- Avoid the deterioration of or improve watershed condition on all other Federal lands.
- Ensure an adequate supply of water for existing and proposed BLM management activities.
- Ensure production of quality water as required by State and Federal legislative acts and regulations for on-site and downstream users.
- Coordinate with the proper local, State, and Federal authorities on water-related issues.

San Rafael RMP, 1991

- Maintain or improve water quality and improve watershed conditions as long as RMP goals are met.
- Improve water quality in areas exceeding State water quality standards.

Water—Existing Management

Current management actions implemented on public lands to protect the water resource include the following:

- Maintain water quality and improve watershed conditions as long as the RMP/MFP goals are met.
- Improve water quality in areas that do not meet or exceed State water quality standards.
- Manage actions on public lands to prevent or minimize flood and sediment damage as needed.
- Manage public lands in compliance with laws, executive orders, and regulations on floodplain and wetlands areas to reduce resource loss from floods and erosion.
- Develop the Watershed Management (1010) program into a vital, progressive resource.
- Integrate water quality with other programs to ensure that watershed considerations are included in other resource decisions.
- Ensure that other resource considerations are included in watershed actions.
- Evaluate and maintain watershed control structures where required.
- Monitor existing water quality and watershed conditions and identify watersheds that contribute high salt and sediment loads to the Colorado and Sevier River Basins.
- Maintain in-house water rights files and a water rights database on the national BLM computer system.

Watershed Management

Watershed management is the protection, conservation, and use of the natural resources of a specific watershed in a way that keeps the soil mantle in place and productive. It also ensures that water yield and water quality meet the desired uses. If not properly protected, watershed lands are readily damaged by erosion, floods, sediment, and fire.

Water—Resource Condition

The RFO lies within portions of 11 separate watersheds located in the Upper Colorado Hydrologic Region (Region 14) and the Great Basin Hydrologic Region (Region 16). The majority of the RFO is contained in the West Colorado River Watershed and the Sevier River Watershed.

In general terms, a hydrologic unit can be defined as any geographic area where water within the area naturally drains to a specific outlet. To better classify hydrologic units, these units are commonly divided into size classifications called "fields." Fields define drainage areas of a specific size within a network of hydrologic units. The largest classification of this kind is termed a 1st field watershed (also called a region). One example of a 1st field watershed is the Colorado River Basin Region, which defines the drainage network for the majority of the states of Colorado, Wyoming, Utah, and Arizona. As part of the ranking system, 1st fields break down into smaller 2nd fields, which can then be further subdivided into 3rd fields, and so on. Delineation of these subdivisions is based on the Interagency Guidelines on Delineation of Watershed and Sub-watershed Hydrologic Unit Boundaries (wwwga.usgs.gov/gis/iag.html).

Because hydrologic units are divided into different size categories, each field receives its own two-digit, numeric identification code. The combination of these numeric codes creates a unique identifier for each subdivision. A standardized hydrologic unit system, referred to as the Hydrologic Unit Code (HUC) system, was developed in the mid-1970s by the USGS under the sponsorship of the Water Resources Council. A hierarchical HUC, containing two digits for each of the six levels, was assigned to identify the hydrologic units. For overall management purposes, the RFO manages to the 4th, sub-basin, hydrologic unit. In particular instances, management may be to the 5th, watershed, hydrologic unit. The underlying concept is a topographically defined set of drainage areas organized in a nested hierarchy by size. Table 3.14-12 presents the Level 4 hydrological units within the RFO, which are also shown on Map 13.

Table 3.14-12. Level 4 HUC Sub-Basin Watersheds

HUC	Watershed Name
14060008	Lower Green
14060009	San Rafael
14070001	Upper Lake Powell
14070002	Muddy
14070003	Fremont
14070004	Dirty Devil
14070005	Escalante
16030001	Upper Sevier
16030002	East Fork Sevier
16030003	Middle Sevier
16030004	San Pitch

Water Rights

In the late 1840s, the Utah pioneers were the first Anglo-Saxons in the United States to practice irrigation on an extensive scale. The desert environment contained much more cultivable land than could be watered from the incoming mountain streams. Early settlers established the principle that those who first made beneficial use of water should be entitled to continued use in preference to those who came later. This fundamental principle was later sanctioned in and known as the "Doctrine of Prior Appropriation."

In the early days of the Utah territory, rights to the use of public streams of water were acquired by actual diversion and application of water to beneficial use or by legislative grant. County courts water

legislation was enacted in 1852 and was in effect until 1880, when a statute for the provision of county water commissioners replaced it.

The Utah State Engineer's Office was created in 1897. The State Engineer serves as the chief water rights administrative officer. The Utah Water Code was enacted in 1903 and was revised and reenacted in 1919. This Utah Water Code, Title 73, with succeeding complete reenactments of State statutes (as amended) is currently in force.

In the west, the cumulative rights of water users usually cover more water than flows naturally in the source so that even the highest stream flows (usually of short duration) can be distributed to the users according to their rights if the water can be used beneficially. Distribution is made under the rule that "first in time is first in right." As stream flows recede, diversions are cut off in order of priorities. The water users usually employ a water-master to supervise water distribution.

The RFO has 2,012 active water right requests filed with the Utah Division of Water Rights, including wells, springs, reservoirs, and streams (both perennial and intermittent). A summary of the BLM water rights is shown in Table 3.14-13.

Table 3.14-13. Type and Number of Water Rights

Type	Number of Applications Filed
Well	28
Spring	330
Reservoirs	243
Silt Free Reservoirs	52
Perennial Streams	277
Intermittent Streams	1,134
Total	2,012

Source: BLM Water Rights Database

Water rights policy varies by area, with area delineated and managed by the Utah Division of Water Rights. Surface waters in Area 97 (the southern area of Garfield County in the RFO) are considered to be fully appropriated except for isolated sources and connected ground waters. In addition, new appropriations are limited to 1.73 acre-feet. Because of this limitation, BLM cannot build any more new earthen reservoir facilities for animal watering and erosion (salinity) control. The 30-acre-feet diversion/depletion amount involved with an earthen reservoir constructed by BLM would far exceed the 1.73-acre-feet limitation. The remainder of the RFO (Areas 95, 94, 61, 63, and 65) is not subject to the 1.73-acre-feet limitation.

Water Resources

The RFO is located within both the Colorado River Basin and the Great Basin. The Henry Mountains portion of the RFO is located in the Upper Colorado River Sub-basin of the Colorado River Basin, whereas most of the Mountain Valley portion of the RFO is located in the Sevier River Sub-basin of the Great Basin hydrologic region. The northernmost portions of the RFO are contained in the Jordan River/Utah Lake Sub-basin of the Great Basin, and the easternmost extent of the Mountain Valley area (the former FPU) is located in the Upper Colorado River Sub-basin. The RFO contains 82 perennial streams (Table 3.14-14) and a larger number of intermittent streams.

Table 3.14-14. Perennial Stream Segments—Richfield Field Office

Antimony Creek	Beaver Creek	Beaver Wash
Birch Creek	Blackburn Draw	Blackham Creek
Boulder Creek	Box Creek	Brine Creek
Browns Creek	Bull Creek	Bullfrog Creek
Burr Creek	Carcass Creek	Cedar Creek
City Creek	Copper Creek	Cottonwood Creek
Cow Creek	Crescent Creek	Deer Creek
Dirty Devil River	Donkey Creek	Dry Creek
Dry Valley Wash	Dry Wash	Dugout Creek
East Fork Sevier River	Fish Creek	Fremont River
Granite Creek	Hansen Creek	Happy Canyon
Hoodle Creek	Ivie Creek	Larry Creek
Lost Creek	Manning Creek	Mill Creek
Mountain Spring Fork	Muddy Creek	Muley Creek
North Creek	North Fork Pistol Creek	North Fork Quitchupah Creek
Oak Creek	Oak Spring Creek	Otter Creek
Pennell Creek	Peterson Creek	Pine Creek
Pleasant Creek	Pistol Creek	Poison Creek
Poison Spring	Quaking Aspen Creek	Quitchupah Creek
Road Creek	Robber's Roost Canyon	Rock Creek
Rocky Ford Creek	Saleratus Creek	Salt Wash
Sams Mesa Box Canyon	San Pitch River	Sandy Creek
Sevier River	Shingle Mill Creek	Skutumpah Creek
South Fork Pistol Creek	Spring Branch	Straight Creek
Sulphur Creek	Sweetwater Creek	Swift Spring Creek
Tenmile Creek	Threemile Creek	Town Wash
Trachyte Creek	Twin Corral Box Canyon	Wild Horse Creek
Yogo Creek		

Note: List generated by using 'Code' attribute from the 'hdwco_rf24' coverage provided by AGRC to select perennial streams. A theme on theme selection from the USGS 1:100,000 National Hydrography Dataset (NHD), which has a 'Name' attribute, was performed. The resulting selection was saved as a shapefile and intersected with Land Status data from Utah School and Institutional Trust Lands Administration (SITLA) to determine which streams cross BLM land.

Source: AGRC; USGS; SITLA

The majority of the streams flowing in the RFO area, whether perennial or intermittent, originate at higher elevations on National Forest lands and flow through private and BLM-administered lands. Many of these streams are characterized by steep streambed gradients and are subject to flooding during rapid snowmelt or high-intensity thunderstorms. As the perennial streams run through public lands, they provide water for livestock, wildlife, fisheries, and downstream irrigation.

Some intermittent and ephemeral streams in the area yield water during periods of spring snowmelt or intense thunderstorm activity. However, much of the water in most of these streams is used for irrigation and does not reach the major rivers.

The Sevier River and its tributaries are regulated by storage reservoirs. Because of this, the Utah State Engineer must approve changes to any water regime. A considerable amount of water from the snowmelt period is stored and released from July to September. Lakes and reservoir storage facilities are an important part in the water resource scheme. Major reservoirs in the area include Otter Creek, Koosharem, Piute, Willow Creek, Gunnison, and Sevier Bridge Reservoirs.

Springs, seeps, and wells in the area provide high-quality water for domestic and livestock use.

In many areas, grazing on riparian vegetation has had an adverse effect on streambanks, and many are in poor condition, with accelerated bank erosion and side-channel cutting. However, no comprehensive survey has been conducted to quantify the degree of streambank degradation.

The Parker Mountain portion of the RFO is part of the Fremont River drainage, which is tributary to the Dirty Devil and Colorado Rivers. There are 38 miles of streambank along the 11 streams that pass through Federal lands. Five streams are intermittent and yield water only during periods of spring snowmelt and summer thunderstorm activity. Most of the streams are diverted for irrigation or are impounded for culinary use and do not contribute water to the Fremont River throughout the year. Table 3.14-15 gives the acres and ownership of each sub-watershed.

Table 3.14-15. Watershed Areas and BLM Ownership—Parker Mountain Area

Watershed	BLM	BLM %	Other	Total
Upper Fremont	860	1	130,340	131,200
Sheep Hollow	11,340	69	5,060	16,400
Long Hollow	15,530	93	1,110	16,640
Road Creek	48,090	85	7,990	56,080
Big Hollow	73,390	62	44,930	118,320
Thousand Lake	12,430	33	24,690	37,120
Wildcat-Pine Cr.	35,180	45	43,380	78,560
Rabbit Valley	1,830	9	19,410	21,240
Teasdale	10,180	18	44,940	55,120
Torrey	21,100	45	26,100	47,200
Miners Mountain	23,060	21	87,980	111,040
Total	**252,990**[a]	**37**	**435,930**	**688,920**

Source: Draft Parker Mountain Grazing EIS

No natural lakes occur within the Parker Mountain area, but there are 68 small reservoirs and several springs. The reservoirs may not have storage water every year.

Lack of quality, up-to-date watershed data for Parker Mountain area has made watershed problems and opportunities identification difficult and in some cases impossible. Meeting State and Federal water quality standards in the future will entail keeping up-to-date studies to identify current problem sources for BLM corrective action

Most of the San Rafael Resource Area is within the Colorado River Basin and includes portions of three smaller drainage basins: the San Rafael, Dirty Devil, and Green Rivers. About 800 acres in the northwestern part of the FPU are within the Sevier River drainage basin, which leads to Sevier Dry Lake.

Waters in the area are used primarily for agricultural, municipal, and industrial purposes. Recreationists and fish and wildlife are also important users but, as a rule, do not consume appreciable quantities of water. Stock watering is also important.

Water Quantity

The streams located in the Henry Mountains generally originate on and flow through public lands. Snowmelt in spring and early summer provides most of the runoff for perennial streams, with subsurface flow being the major contributor during the remainder of the year. A large number of streams are intermittent and flow only for brief periods during snowmelt and high-intensity thunderstorms. Estimation of water yield is difficult because a high proportion of runoff results from cloudburst floods and because most areas produce little or no runoff. Average annual water yield is estimated to be 0.14 inch per acre, with the range estimated to be from 0.01 to 0.38 inch per acre from public land. There are

numerous (more than 110) small storage reservoirs on intermittent streams. Many are in need of repair and are located where other surface water or groundwater sources are unavailable.

Water quantity in the Fremont River is severely impacted by irrigation. One parcel of BLM land on the Fremont River, a few miles below the Mill Meadow Reservoir, has no flow during parts of the summer season. A BLM parcel further below is reduced to pools barely large enough to sustain fish populations.

Surface Water

Most surface water in the area flows from USFS land on the Wasatch Plateau. The perennial streams and their major tributaries are diverted for irrigation. During the summer, most of the water is return flow from irrigation. Surface water quality in most of the area is poor, with high TDS levels and heavy sediment loads.

Irrigation return flow adds to the salinity problem. Runoff from public lands tends to accumulate salts and sediment and to transport them into the main drainages during storms, adding to the salt content of Muddy Creek.

Groundwater

Groundwater quality is highly variable, depending on the formation in which the aquifer is located and on the well location.

Groundwater contamination is a continuing concern. Fresh water in the Navajo Formation is contaminated with high levels of TDS where this formation is exposed next to Muddy Creek. Activities such as mining or drilling have the potential to contaminate this and other freshwater aquifers.

Most groundwater recharge occurs from areas of irrigation return flow and near the USFS boundary. Larger and more consistent quantities of water and a greater number of water sources are in demand, particularly for wildlife and livestock.

Water Quality

Water quality is the measurement of physical, chemical, and biological parameters of the streams in the area. The target parameters are set by State and Federal regulations for particular stream segments or particular water uses. State water quality standards for total maximum daily load (TMDL) have been exceeded at several stations and reported by the EPA data. Short-term variances in water quality have also occurred.

In general, water quality is good in the upper portions of the streams and decreases downstream as salts accumulate, ground cover diminishes, water temperatures increase, fecal coliform count from livestock and wildlife increases, and sediment accumulates from runoff and snowmelt. For example, the sediment yields of the Dirty Devil River and Muddy Creek are high, as their names imply. Most of the sediment discharge by streams in arid and semiarid regions is transported during short periods, usually as a result of thunderstorms. In general, water quality relative to its sediment content is best during periods of low flow, and water quality relative to its chemical content is best during periods of high flow.

Impaired Water Bodies

Pursuant to Section 303(d) of the Clean Water Act (as amended) each State is required to identify those water bodies for which existing pollution controls are not stringent enough to maintain State water quality standards. Water or water bodies (i.e., lakes, reservoirs, rivers, and streams) that are not currently achieving or are not expected to achieve those standards are identified as water quality limited. The

quality of a water body can be limited because of point sources of pollution, nonpoint sources of pollution, or both. In addition, pollutants can result from habitat alterations (e.g., riparian habitat loss) or hydrological modifications. Surface water quality problems are detailed in Utah's 303(d) list of impaired waters, as required by the Clean Water Act.

A full list of the streams and water bodies located within the RFO and listed on Utah's 2002, 303(d) list of impaired waters is included in Tables 3.14-16 and 3.14-17 and shown on Map 14. Tables 3.14-18 and 3.14-19 display stream and river bodies of water and/or specific parameters to be removed from Utah's 2000 303(d) list. Water bodies that receive permit renewals between April 1, 2002, and March 31, 2004, are listed for pollutants that are not controlled through technology-based requirements or end-of-pipe requirements. With few exceptions, stream water bodies assessed as "partially supporting" or "not supporting" their beneficial uses are listed.

Another aspect of impairments to water is TMDL. This is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

Water quality standards are set by the State of Utah following EPA guidelines. These standards identify the uses for each water body (for example, drinking water supply, contact recreation [swimming], and aquatic life support [fishing]) and the scientific criteria supporting those uses.

A TMDL is the sum of the allowable loads of a single pollutant from contributing point and nonpoint sources. The calculation must include a margin of safety to ensure that the water body can be used for the purposes the State has designated. The calculation must also account for seasonal variation in water quality.

Water quality standards have been set by the State of Utah to protect waterways for designated uses. In general, waters in the Sevier River drainage are not designated to be protected for raw water sources, for domestic water systems, or for protection for in-stream recreational use and aesthetics. Rather, waterways were designated to be protected for agricultural uses, including irrigation of crops and stock watering, and to varying degrees for in-stream use by beneficial aquatic wildlife. Recent actions by the Board of Directors of the DEQ/Utah Division of Water Quality, however, have upgraded the standards for water quality to be consistent throughout the State, basically to protect water quality from degradation and aquatic wildlife. This action is being reviewed and submitted; when the revised action is approved, it will supersede the above statement.

Table 3.14-16. Utah's 2002 303(d) List of Impaired Streams and River Bodies Needing TMDL Analysis

Water Body Name	Water Body Description	HUC Unit	Causes
Sevier River–3	Sevier River and tributaries from Circleville Irrigation Diversion upstream to Horse Valley Diversion	16030001	Total phosphorus Sediment Habitat alterations
Sevier River–2	Sevier River and tributaries from Horse Valley Diversion upstream to Long Canal Diversion, excluding Panguitch Creek, Bear Creek, and their tributaries	16030001	Total phosphorus Sediment Habitat alterations
Sevier River–1	Sevier River and tributaries from Long Canal to Mammouth Creek confluence	16030001	Total phosphorus Sediment
Sevier River–4	East Fork Sevier River and tributaries from confluence with Sevier River upstream to Antimony Creek confluence, excluding Otter Creek and tributaries	16030002	Total phosphorus

Water Body Name	Water Body Description	HUC Unit	Causes
Salina Creek	Salina Creek and tributaries from confluence with Sevier River to USFS boundary	16030003	TDS
Lost Creek	Lost Creek and tributaries from confluence with Sevier river upstream ~ 6-miles	16030003	TDS
Sevier River–18	Sevier River from Sevier Bridge Reservoir (Yuba Reservoir) dam upstream to the confluence with Salina Creek	16030003	Total phosphorus Sediment Habitat alterations TDS
Sevier River–14	East side tributaries of Sevier River from Rocky Ford Reservoir upstream to Annabelle Diversion and below USFS boundary.	16030003	TDS
Sevier River–13	Sevier River from Rocky Ford Reservoir upstream to Annabelle Diversion	16030003	TDS
San Pitch–1	San Pitch River and tributaries from confluence with Sevier River to tailwater of Gunnison Reservoir, excluding tributaries above USFS boundary	16030004	TDS
San Pitch–3	San Pitch River and tributaries from Gunnison Reservoir to U-132 crossing below USFS boundary	16030004	TDS
Lower Muddy Creek	Muddy Creek from confluence w/Fremont River to Quitchupah Creek	14070002	TDS
Lower UM Creek	UM Creek from Mill Meadow to Forsythe Reservoir	14070003	Dissolved oxygen
Fremont River–4	Fremont River and tributaries from confluence with Dirty Devil to East Boundary of Capitol Reef National Park	14070003	Dissolved Solids
Fremont River–2	Fremont River near Bicknell to USFS boundary	14070003	Total Phosphorus

Source: UDWQ 2002

Table 3.14-17. Utah's 2002 List of Impaired Lakes and Reservoirs Identified as Needing TMDL Analysis for Beneficial Use Impairment 3A

Water Body Name	Water Body ID	Pollutant or Stressor
Piute Reservoir	UT-L-16030001-01	Total phosphorus
Koosharem Reservoir	UT-L-16030002-01	Total phosphorus
Lower Box Creek Reservoir	UT-L-16030002-00	Total phosphorus
Manning Meadow Reservoir	UT-L-16030003-00	Dissolved oxygen Total phosphorus
Navajo Lake	UT-L-16030001-00	Dissolved oxygen
Nine Mile Reservoir	UT-L-16030004-00	Total phosphorus Dissolved oxygen
Otter Creek Reservoir	UT-L-16030002-00	Total phosphorus
Panguitch Lake	UT-L-16030001-00	Total phosphorus Dissolved oxygen
Forsythe Reservoir	UT-L-14070003-01	Total phosphorus Dissolved oxygen
Johnson Reservoir	UT-L-14070003-01	Total phosphorus
Mill Meadow Reservoir	UT-L-14070003-01	Total phosphorus

Table 3.14-18. Stream and River Water Bodies and/or Specific Parameters to Be Removed From Utah's 2000 303(d) List

Water Body Name	Water Body Description	HUC	Parameter of Concern	Justification
Sevier River–10	Sevier River from Vermillion upstream to Annabelle Diversion	16030003	TDS	This water body was redefined, and the cause of impairment assigned to that redefined water body.
Sevier River–14	Sevier River and tributaries from Sevier Bridge Reservoir to Salina Creek confluence (excluding Willow Creek and San Pitch River)	16030003	TDS, Sediment, Total phosphorus	New water body delineations were made in the Sevier River Watershed. This water body no longer exists. The causes were applied to the new water body.
Sevier River–15	Sevier River and tributaries from Gunnison Bend Reservoir to Sevier Bridge Reservoir (excludes Chicken Creek and tributaries within USFS)	16030005	TDS, Sediment, Habitat alteration, Total phosphorus	This water body was re-delineated into two water bodies. The causes were assigned to each of the water bodies with the exception that the TDS standard was met in the upper water body.
Sevier River–3	Sevier River and tributaries from Circleville to confluence with Bear Creek	16030003	Total phosphorus, Sediment, Habitat alteration	This water body was redefined and does not exist as described.

Table 3.14-19. Lake and Reservoir Water Bodies and/or Specific Parameters to Be Removed From Utah's 2000 303(d) List

Water Body Name	Water Body ID	Parameter	Justification
Otter Creek Reservoir	UT-L-16030002-004	Temperature	More information is needed to determine whether this reservoir should be listed.
Palisades Reservoir	UT-L-16030004-005	Temperature	More information is needed to determine whether this reservoir should be listed.
Piute Reservoir	UT-L-16030001-011	Temperature	More information is needed to determine whether this reservoir should be listed.

Source: UDWQ 2002

Water quality of the Sevier River decreases downstream because of return flow from irrigation of lands, which have a moderate salt content. Another problem is coliform and other pollutants resulting from feedlot activities and surface runoff. Sediment load in the Sevier River is a problem during periods of high runoff from such sources as snowmelt or severe summer thunderstorms.

Water quality studies on public lands have been limited. Sediment load problems exist in perennial streams during the periods mentioned, which are a function of stream channel and upstream erosion.

Management objectives should identify municipal water sources and associated watersheds that originate of public lands. In addition, management criteria should be developed to protect these areas from degradation of water quality, especially where these sources are used for culinary purposes. Sources that are "at risk" for degradation should be identified and plans developed to reduce the impact on these waters. In addition, there should be coordination with local communities on the access, protection, and development of municipal water resources

Water Use

The primary water use is by livestock and wildlife. Other water uses include mining, irrigation, domestic, and at times, power generation.

Water Yield

Generally, single short-duration storms produce higher peak flows in small watersheds. The 2-hour-duration storm is the most common for small watersheds of Utah (SCS [now the NRCS] procedures for hydrology analysis, unpublished). The total yield of a 2-hour, 10-year-frequency storm covering the entire Parker Mountain area is about 2,747 acre-feet.

There are insufficient data to show actual water yield from the entire area. Totals were estimated for the 11 watersheds using yield maps prepared by the Utah Water Lab at Utah State University. The results indicate that a total of 116,614 acre-feet of water are produced each year from the watersheds.

The average annual water yield from within the Parker Mountain area itself was estimated to be 10,939 acre-feet. Thus, only about 9 percent of the total watershed yield is from lands within the planning unit.

Table 3.14-20. Estimated Annual Water Yield by Watershed—Parker Mountain Area

Watershed	Estimated Annual Yield (acre-feet)
Upper Fremont	27,430
Sheep Hollow	1,600
Long Hollow	5,200
Road Creek	300
Big Hollow	20,600
Thousand Lake	18,400
Wildcat-Pine Cr.	0
Rabbit Valley	6,100
Teasdale	18,100
Torrey	1,500
Miners Mountain	15,000
Total	**114,230**

Source: Draft Parker Mountain Grazing EIS

Riparian Zones

A riparian zone is that ecosystem situated between aquatic and upland ecosystems that is periodically influenced by flooding. These areas have some of the highest biodiversity in plant and animal species. Proper functioning riparian zones provide many important benefits, including the following:

- Filtering of excessive nutrients can provide water quality protection.
- Sinuosity and vegetation buffering of high flows during spring runoff and summer cloudbursts can provide flood control by slowing velocity.
- Increasing vegetation along riparian zones can lower water temperatures. This would prevent the release of phosphorus and other nutrients that could result in eutrophication that would affect water quality and diversity of aquatic habitat.
- Wildlife species diversity and density are normally highest along these corridors.
- These areas provide habitat for many species that face listing under the Threatened and Endangered Species Act.
- These areas serve as important movement corridors for wildlife between different habitat areas.

- Recreation benefits result from the vast diversity of these environments, especially the presence of trails, moderated climate, and abundant wildlife viewing opportunities.
- Economic benefits are created by increasing the value of adjacent lands.

Riparian zones in the RFO need to be mapped, cataloged, and evaluated for proper functioning condition, and an extensive GIS database developed on riparian ecosystems.

Management strategies need to be developed to prevent loss of vegetation cover, channelization and bank destabilization, nutrient-laden runoff, and excessive sedimentation from entering riparian ecosystems.

Water—Issues and Opportunities

Water issues are integral to many resources and resource uses in the RFO. Opportunities for water are scarce, which is in itself an issue. Other issues that need to be considered for future management decisions that will reduce impacts on water resources in the RFO are as follows:

- Water quality was not described or addressed in any of the existing plans. Most of the plans fail to address water quality standards. These standards must be included as described by the State in the new plan.
- None of the RFO plans address the effects of BLM-authorized surface disturbing activities on the State of Utah's TMDL water quality program. In the new plan, the analysis of the effects of BLM-authorized activities in relation to the State of Utah TMDL water quality program should be included.
- There is a need to identify in the planning process the groundwater quality protection aspects of water quality that would involve the underground aquifer resource.
- Water quality concerns, including groundwater, related to activities on public lands should be included, including but not limited to, the requirements mandated by the Clean Water Act, State water classifications in the 303d and 305 report, state water inventories, and sources at risk for water quality problems caused by naturally occurring formations.
- Priority watersheds should be identified within the RFO. Management criteria should be developed for actions allowed within priority watersheds. The limits of acceptable change for water quality as a result of BLM-authorized activities should then be evaluated.
- Best management practices should be established for management of water quality and criteria set for restoring quality of waters not meeting state standards.
- Municipal water sources and associated watersheds many times originate on public lands. There are rights-of-way granted to the municipalities for use and development of these water resources. Protection of these areas, as identified by the municipality in the source protection plans, must be coordinated with the municipality.

3.15 WILD HORSES AND BURROS

The Wild Free-Roaming Horses and Burros Act of 1971 directs the Secretary of the Interior to manage wild horses and burros as an integral part of the natural system of the public lands. Pursuant to this, BLM manages wild free-roaming horses and burros to achieve and maintain a thriving natural ecological balance on the public lands. This section addresses the management situation of wild horses and burros in the RFO.

Wild Horses and Burros—Current Land Use Plan Direction

There are only two objectives for wild horse and burro management between the two LUPs that manage herd areas. There are some management actions in the Henry Mountains MFP that address wild horse and burro management, but the objectives that drive these actions are contained in the grazing section.

Forest MFP, 1977

- Provide forage, living space, and protection for the five wild horses of the unit.

Mountain Valley MFP, 1981

- There are no goals or objectives addressing wild horses and burros or their management in this plan.

Henry Mountains MFP, 1982

- There are no goals or objectives addressing wild horses and burros or their management in this plan.

Parker Mountain MFP, 1983

- There are no goals or objectives addressing wild horses and burros or their management in this plan.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- Although there is an objective addressing the management of wild horses in this plan, it does not apply to the RFO. Only one herd management area (HMA) on the public lands is addressed by this plan, for which the objective is written. The RFO does not manage the HMA addressed in this plan.

San Rafael RMP, 1991

- Manage wild, free-roaming horses and burros to maintain a thriving natural ecological balance with other resources, keeping equine numbers within designated limits.

Wild Horses and Burros—Existing Management

There is one wild horse HMA and one wild burro HMA in the RFO, though the Price Field Office manages the wild horse HMA (Map 19). The Robbers Roost HMA extends from the Price Field Office into the RFO east of Hanksville. Price Field Office, through the San Rafael RMP, manages the horses in this HMA. The San Rafael RMP addresses monitoring and maintaining wild horse and burro herds within Appropriate Management Levels (AML) designated in the plan. The San Rafael RMP set the AML for the Robbers Roost HMA at 25 animals. It is estimated that 82 horses are currently in the Robbers Roost HMA, with an estimated 30-50 head in the RFO portion of the HMA.

The Henry Mountains MFP Range Management section addresses the need to consider the wild burros in the Canyonlands HMA in eastern Wayne County. The objectives of the Range Management section are to maintain or improve rangeland conditions and to implement grazing management use levels that do not exceed the capacity of the rangeland to support allocation of forage to livestock and big game on various allotments and unallotted areas. Following management recommendations to achieve this objective include managing for optimum livestock production on public lands and providing rangelands and forage for existing numbers of wild burros. The Henry Mountains MFP proposed that 100 AUMs be allocated for burros in the Canyonlands HMA. In 2000, the Henry Mountains MFP was amended to allow for relinquishment of 1,441 AUMs. In the amendment, it was noted that the relinquished AUMs would be available for use by wildlife, wild burros, and for watershed enhancement.

No AML has been finalized through the planning process for the burros in the Canyonlands HMA. A staff report dated August 28, 2001, proposed an AML of 75 burros with a range between 60 and 100 animals. Current management of the herd includes regular inventories to monitor burro numbers. The isolation of this burro HMA creates difficulty in extensive management.

The FPU MFP sets an objective for providing forage, living space, and protection for five wild horses that were found in the unit when the plan was written. The rationale for this recommendation was that the horses were present in the FPU at the passage of the Wild Free-Roaming Horses and Burros Act; therefore, the establishment and management of a HA was legally required. In addition to the acknowledgement of the horses' existence, the Forest MFP recommends that water, forage, and access resources be provided for the few horses present. The Forest MFP's final recommendation was to relocate the horses from the FPU to the Warm Springs Resource Area in the old Richfield District. The reasoning for this decision is that the few horses remaining lacked the vigor or reproductive capabilities to be successful in the FPU. Horses in the FPU were not mentioned until the San Rafael RMPs MSA, which briefly mentions that the horses had moved from the area. Currently, there are no wild horse or burro HMA in the old FPU.

Herd population management is critical in balancing herd numbers with forage resources. "Wild horses have been shown to be capable of 18 to 25 percent increases in numbers annually. This can result in a doubling of the wild horse population about every 3 years" (BLM, 2002g). Wild burro reproduction rates are slightly lower than that of wild horses, though populations may double in 3-4 years. The regular increase in population impacts the condition of the range within an HMA, which in turn leads to greater competition for resources between wild horses and cattle or wildlife, specifically elk with horses and bighorn sheep with burros. Populations are currently maintained within AML through wild horse and burro gathers. These gathers are performed as necessary, with a regular frequency of one every 3-4 years. Extenuating circumstances such as drought, high reproduction rates, and poor range condition may alter the frequency of gathers. The Price Field Office manages the horses in the Robbers Roost HMA and gathers as needed. In 1990, 13 burros were removed from the Canyonlands HMA. Gathered horses and burros are either placed for adoption through the Wild Horse and Burro Adoption Program or are placed in long-term holding facilities according to current management policies and practices. No burros have been gathered from Canyonlands HMA since 1990.

There are significant data gaps in what is known about the burros. Simple population data is collected through regular aerial surveys. In relation to this and other data gaps, IM 2002-95 requires the following data be collected:

- Population demographics (age structure/sex ratio)
- Herd characteristics (color/size/type/etc.)
- Reproduction and survival rates
- Herd health (parasite loading/physical condition/etc.)

- Herd history and genetic profile (blood and hair sampling)
- Condition class (Henneke System)
- Immuno-contraception data, if applicable.

BLM is currently researching the use of immuno-contraceptives to slow the reproductive rate of wild horses and burros. Although still considered experimental, immuno-contraceptives are used extensively throughout BLM. This method of population control has been used on horses in the Muddy Creek HMA and is planned for use on horses in other HMAs.

Constraints and threats to wild horse and burro management include, but may not be limited to, the following:

- Competition between bighorn sheep and burros
- Competition between elk and horses
- Use in grazing allotments in which critical soils make up more than 50 percent of the area
- Competitive use between livestock (cattle and sheep) and wild horses or burros
- Illegal chasing, capturing, and harassment of wild horses and burros.

Wild Horses and Burros—Resource Condition

It is estimated that about 82 horses are currently present in the Robbers Roost HMA, with 30–50 estimated in the RFO portion (Hunter, 2002). As the numbers indicate, these horses have not been gathered for several years. Annually, there is concern over the number of horses and the amount of water and forage available for them. There are also concerns over inbreeding, but no genetic work has been performed for several years on the horses from this HMA.

The last inventory of the burros in the Canyonlands HMA identified nearly 60 burros present. The burros of the Canyonlands HMA are unique in that there is a predominance toward pinto coloration, usually rare in wild burros. The remote nature of the Canyonlands HMA, coupled with the rough terrain, frustrates opportunities for the public to view these unique animals. The same geographic characteristics also help in protecting the burros from the illegal harassment seen in the burro herd in the Sinbad HMA in Price Field Office. The livestock AUMs in the Robbers Roost allotment, where the Canyonlands HMA is located, have recently been in nonuse as a result of a conservation group purchasing the ranch that had been grazing livestock in that area. As a result, the burros have not had significant competition for forage.

The FPU MFP addresses wild horses in that area, though there is no record of a Herd Area or HMA in the old FPU. The horses addressed in the old MFP may have been from the Muddy Creek HA overlapping from Emery County. No wild horses are known to exist in the old FPU area.

Wild Horses and Burros—Issues and Opportunities

Several issues were raised through internal and public scoping related to the management of wild horses and burros in the RFO. The main issue in management of these resources is that the current national policy for management of horse and burro herds is not incorporated into the existing LUPs. The following list identifies other issues related to the management of the wild horses and burros in the RFO.

- The new RMP needs to identify the prescription for managing the herds at viable numbers and set a viable population objective of 50 or more.

- In light of an approved AML, herd boundaries and forage allocations need to be established for the horses and burros in the new plan. The use of these areas by livestock and wildlife should also be addressed.
- This planning effort should implement the national policy to manage horse and burro herds in a 4-year rotation, where herd size maximizes over a 4-year period, then is reduced to the minimum objective level through adoptions, and then again allowed to increase.
- The new RMP should be flexible enough to allow for the use of contraceptives and other experimental and accepted management practices to meet the four-year gather schedule as described in the national policy.

In addition to these issues, BLM policy allows for the opportunity to designate Wild Horse and Burro Ranges when there is a significant public value present, such as unique characteristics in a herd or an outstanding opportunity for public viewing. The pinto coloration of the wild burros in the Canyonlands HMA may be such a unique characteristic, though the isolation of the HMA may discourage the opportunity of a Burro Range because of the lack of public access.

3.16 WILDERNESS AND OTHER SPECIAL DESIGNATIONS

The Land Use Planning Handbook (H-1610-1) directs BLM, through the resource management planning process, to determine which eligible river segments are suitable for inclusion in the National Wild and Scenic River System, designate ACECs, and designate Backcountry Byways. Designation of special areas serves to meet BLM's goals and objectives for management of a variety of resource values and uses, including preservation of natural areas and free-flowing rivers; protection of watersheds, wildlife habitat, and biological diversity; prevention of irreparable damage to resources or natural systems; protection of life and safety where natural hazards exist; and provision of opportunities for solitude, primitive forms of recreation, and back country driving.

This portion of the MSA discusses existing land use planning decisions regarding wilderness and other special areas, describes how these resources are currently being managed, describes the existing condition of these resource values, identifies the planning issues the RMP will resolve with regard to wilderness and other special areas, and discusses the opportunities or capability of the existing resource to respond to the planning issues.

Wilderness and Other Special Designations—Current Land Use Plan Direction

Forest MFP, 1977

- There are no goals or objectives addressing wilderness, WSAs, or other special designations, or management of the same, in this plan.

Mountain Valley MFP, 1981

- There are no goals or objectives addressing wilderness, WSAs, or other special designations, or management of the same, in this plan.

Henry Mountains MFP, 1982

- Identify, designate, and manage all areas of critical environmental concern in the Henry Mountains Planning Area.
- Determine which public lands in the resource area are suitable for preservation as wilderness.

Parker Mountain MFP, 1983

- There are no goals or objectives addressing wilderness, WSAs, or other special designations, or management of the same, in this plan.

Cedar-Beaver-Garfield-Antimony RMP, 1986

- There are no goals or objectives addressing wilderness, WSAs, or other special designations, or management of the same, in this plan.

San Rafael RMP, 1991

- To manage areas undergoing wilderness review under the interim management policy; and to manage designated wilderness areas to protect wilderness values.
- To conduct suitability studies of rivers for wild and scenic river designation and to analyze all other rivers in the resource area as to eligibility and classification for wild and scenic river designation.

BLM Handbook H-8550-1, 1995

- BLM will manage resource values and uses in WSAs in a manner that maintains the areas' suitability for preservation as wilderness.

Wilderness and Other Special Designations—Existing Management

In 1964, the Congress passed the Wilderness Act, establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for benefit of future generations. Until 1976, the USFS and NPS managed most of the lands considered for and designated as wilderness. With the passage of the FLPMA in 1976, the Congress directed BLM to inventory, study, and recommend which public lands under its administration should be designated as wilderness.

In 1979, BLM began an inventory of 2.5 million acres of public land in the RFO. In 1980, BLM completed that wilderness inventory, finding 11 areas in the field office area, totaling about 430,000 acres that possess wilderness character. In 1991, 10 areas totaling about 300,000 acres were recommended to the Congress for wilderness. To date, the Congress has not acted on that recommendation.

In the years since BLM completed its inventory and forwarded recommendations for wilderness designation, Utah wilderness has continued to be an issue of national debate. For more than 20 years, the public has debated which lands have wilderness character and should be considered for wilderness designation. The discussion continues today. Because of the continued disagreement over which lands have wilderness character, and the significant passage of time since BLM's original inventory, the Secretary of the Interior directed BLM to take another look at the areas in question.

In 1996, the Secretary directed BLM to review certain lands in Utah (lands being proposed for wilderness designation in legislation before Congress—H.R. 1500) to determine if they had wilderness character. Specifically, the review was to answer questions such as: In the 20 years since BLM completed its first inventory, had conditions changed on the ground? Were there other lands in Utah that possessed wilderness characteristics? Following resolution of an injunction in a lawsuit that challenged the Secretary's authority to conduct the inventory, BLM completed the second inventory in 1998. In 1999, they released the 1999 Utah Wilderness Inventory, finding an additional 21 areas and 551,774 acres of public land in the RFO to have wilderness character.

The Southern Utah Wilderness Alliance (SUWA), on behalf of the Utah Wilderness Coalition (UWC), has submitted information to BLM suggesting that 9 new areas overlapping lands managed by both Price Field Office and RFO, totaling approximately 225,100 acres (of which approximately 98,230 are in the RFO), have wilderness character, and requested that BLM designate these areas as WSAs or provide other protective management prescriptions. BLM, through the resource management planning effort, will evaluate this information in accordance with FLPMA, and determine if any of the areas "are likely" to have wilderness characteristics. Areas that are likely to have wilderness characteristics will be considered in the planning process.

Purpose of the Planning Process

The purpose of the planning process is twofold. First, should any of the existing WSAs be released from wilderness consideration by Congress and subsequently be released from management under interim management policy, this planning process will prescribe how those lands will be managed. Second, non-WSA lands with and likely to have wilderness characteristics will be evaluated through the Richfield RMP/EIS to analyze the values, resources, and uses within each area. The planning process will determine how the wilderness characteristics of these lands will be managed. Although BLM will not consider establishing additional WSAs through this process, the agency will consider whether to preserve

some or all of the wilderness characteristics of the non-WSA lands with other land management allocations and actions (e.g., ACEC designations, SRMAs, OHV designations, limitations on oil and gas leasing, management of recreation settings, activities, and experiences, and others).

Legal Authorities and Decision Framework

Legal Authorities

The authorities that provide for management of existing WSAs and consideration of values associated with wilderness characteristics in land use planning are listed as follows:

- Wilderness Act of 1964, 16 U.S.C. 1131
- NEPA, 42 U.S.C. 4321
- CEQ regulations at 40 CFR 1500-1508
- FLPMA, 43 U.S.C. 1701, et seq., Sections 201 and 202.

BLM Guidance

BLM's policy and guidance that provide for management of WSAs and consideration of values associated with wilderness characteristics in land use planning is included in—

- Manual Handbook H-1601-1, Land Use Planning Handbook
- Manual Handbook H-8550-1, Interim Management Policy and Guidelines for Land Under Wilderness Review
- Washington Office IM No. 2003-274, BLM Implementation of the Settlement of *Utah v. Norton* Regarding Wilderness Study
- Washington Office IM No 2003–275 Change 1, Consideration of Wilderness Characteristics in Land Use Plans (Excluding Alaska) (see Appendix A).

Process

BLM's policy for consideration of the existing and potential wilderness characteristics of non-WSA lands with and likely to have wilderness characteristics and how to manage for these values is included in IM No. 2003–275 Change 1. The evaluation will consider an area's wilderness characteristics, the ability to manage the area for its wilderness characteristics, and other resource values and uses in the non-WSA lands. To complete the evaluation, the following criteria will be evaluated:

- **Evaluation of Wilderness Characteristics**—the extent to which the quality of the area's wilderness characteristics contribute to—
  - Naturalness
  - Outstanding opportunity for solitude
  - Outstanding opportunity for primitive recreation.

- **Evaluation of Manageability**—the area's capability of being effectively managed. A decision to protect and preserve an area's natural condition or provide for opportunities for solitude or primitive recreation may be made in the RMP process. Consider the following:
  - Management considerations outlined in IM 2003-275 Change 1. These include establishing goals and objectives that describe the desired condition of the land and resources, desired outcomes of the recreation experience, and allowable uses.
  - Land status
  - Access to State or private inholdings
  - Valid existing rights.

- **Other Resource Values and Uses**—both the extent to which other resource values and uses of the area would be foregone or adversely affected, and the benefits that would accrue to other resource values and uses as a result of managing for the values associated with wilderness characteristics in a particular area.

Planning Area Profile

There are three categories of lands with existing or potential wilderness characteristics in the RFO: WSAs, BLM inventory areas found to have wilderness characteristics, and lands proposed for wilderness by the public that BLM has determined are likely to have wilderness characteristics. There are no designated Wilderness Areas on public lands under the administration of the RFO.

Wilderness Study Areas

With completion of the inventory in 1980, BLM designated 11 WSAs, totaling approximately 430,000 acres, in the RFO area. Map 20 shows the WSAs in relation to the remainder of the RFO. The 11 WSAs are as follows:

- Bull Mountain
- Dirty Devil
- Fiddler Butte
- Fremont Gorge
- French Spring/Happy Canyon
- Little Rockies
- Mount Ellen/Blue Hills
- Mount Hillers
- Mount Pennell
- Horseshoe Canyon (south)
- Portion of the Horseshoe Canyon (north).

These WSAs, established under the authority of Section 603(c) of FLPMA, are being managed to preserve their wilderness values according to the interim management policy, and will continue to be managed in that manner until Congress either designates them wilderness or releases them for other uses.

Management of WSAs is similar but generally less restrictive than management of designated wilderness, but activities that would impair wilderness suitability are prohibited. Examples of some of the activities that are allowed in WSAs include hunting, fishing, camping, hiking and horseback riding, livestock grazing, and travel with motorized vehicles on existing routes.

There are six primary provisions of FLPMA with regard to interim management of WSAs:

1. WSAs must be managed so as not to impair their suitability for preservation as wilderness.
2. Activities that are permitted in WSAs must be temporary uses that create no new surface disturbance, nor involve permanent placement of structures.
3. Grazing, mining, and mineral leasing uses that existed on October 21, 1976, may continue in the same manner and degree as on that date, even if this would impair wilderness suitability of the WSAs.
4. WSAs may not be closed to appropriation under the mining laws to preserve their wilderness character.
5. Valid existing rights must be recognized.
6. WSAs must be managed to prevent unnecessary or undue degradation.

Only the Congress can designate the WSAs established under Section 603 of FLPMA in 1980 as wilderness, or release them for other uses. The status of the existing WSAs will not change as a result of the Richfield resource management planning process. Therefore, they will not be addressed in detail in this MSA. A discussion of the current resource values and uses in each WSA can be found in the Utah BLM Statewide Wilderness Final Environmental Impact Statement.

Non-WSA Lands With and Likely to Have Wilderness Characteristics

In the Utah wilderness inventory completed in 1999, BLM identified 21 areas within the RFO (totaling about 551,774 acres) that possess wilderness characteristics. The wilderness characteristics of these 21 areas will be studied through the Richfield RMP/EIS to determine how they should be managed (see Table No. 3.16-1).

Table 3.16-1. Non-WSA Lands with Wilderness Characteristics

Wilderness Inventory Area Name	Area (in acres)
Bull Mountain	3,820
Bullfrog Creek	29,660
Dirty Devil—French Spring	111,180
Dogwater Creek	3,470
Fiddler Butte	19,730
Fremont Gorge	14,940
Horseshoe Canyon (south)	20,670
Jones Bench	2,810
Labyrinth Canyon	12,420
Limestone Cliffs	23,930
Little Rockies	23,290
Long Canyon	17,110
Mount Ellen—Blue Hills	48,280
Mount Hillers	1,060
Mount Pennell	59,660
Muddy Creek—Crack Canyon*	61,900
Mussentuchit Badlands*	700
Notom Bench	6,390
Ragged Mountain	25,490
Red Desert	30,940
Wild Horse Mesa*	35,040
21 areas	**552,490**
* Acreage figure applies only to the lands administered by the RFO.	

Revision to the 1999 Utah Wilderness Inventory.

Non-WSA lands with wilderness characteristics are managed according to the management prescriptions of existing LUPs.

In March 2004, SUWA submitted comments regarding wilderness characteristics of the 21 Non-WSA lands with wilderness characteristics found in Table 3.16-1. In the 1999 effort, BLM identified the wilderness characteristics that were present, established boundaries and revised the preliminary determinations following a public comment period, during which SUWA also submitted comments. Although the recent comments mirror in many cases the comments received in the BLM inventory effort and are essentially differences of opinion, the recently received comments provided by SUWA will be evaluated in the RMP/EIS.

Non-WSA Lands Likely to Have Wilderness Characteristics

In March 2002, SUWA submitted information to BLM on five UWC-proposed wilderness units. In December 2003, SUWA submitted information on the wilderness characteristics of another four areas. Table No. 3.16-2 identifies the proposed wilderness units and acreages.

Table 3.16-2. Non-WSA Lands Proposed for Wilderness by the Public

Proposal Name	Area (in acres)
Cane Springs Desert	18,000
Flat Tops*	26,070
Kingston Ridge	10,000
Phonolite Hill	8,000
Pole Canyon	4,700
Rock Canyon*	13,920
Rocky Ford	7,400
Sweetwater Reef*	7,150
Wild Horse Mesa*	2,990
9 areas	**98,230**
* Acreage figure applies only to the portions administered by the RFO.	

An interdisciplinary team of BLM specialists evaluated and assessed the information initially submitted by SUWA on the first five areas to determine if there were significant new circumstances or information relevant to environmental concerns and bearing on the alternatives or their impacts. From that evaluation, BLM determined that four areas proposed for wilderness by UWC are likely to have wilderness characteristics and will be analyzed in the Richfield RMP/EIS to determine how those potential characteristics will be managed. See Table 3.16-3.

The later submittal of four additional areas was not evaluated individually by an interdisciplinary team. The four areas proposed for wilderness by UWC will be analyzed in the Richfield RMP/EIS to determine if they are likely to have wilderness characteristics and to determine how those potential characteristics will be managed. See Table 3.16-3.

Table 3.16-3. Non-WSA Lands Likely to Have Wilderness Characteristics

Proposal Name	Area (in acres)
Flat Tops*	26,070
Rock Canyon*	13,920
Sweetwater Reef*	7,150
Wild Horse Mesa*	2,990
4 areas	**50,130**
Kingston Ridge	10,000
Phonolite Hill	8,000
Pole Canyon	4,700
Rocky Ford	7,400
4 areas	**30,100**
TOTAL 8 areas	**80,230**
* Acreage figure applies only to the lands administered by the RFO.	

Non-WSA lands *evaluated* by BLM and found likely to have wilderness characteristics, like non-WSA lands that have been *inventoried* by BLM and which have been determined to possess wilderness characteristics, are managed according to the management prescriptions of existing LUPs.

Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 authorizes the designation of wild and scenic river segments. Wild and Scenic River designation is intended to protect a river's free-flowing condition, water quality, and outstandingly remarkable values (Interagency Wild and Scenic Rivers Coordinating Council, 2002). Rivers can be designated by an act of Congress or by the Secretary of the Interior at the request of a State governor. Designation includes a process of classification intended to describe the intensity of development in existence at the time of designation. The three types of potential classification are wild river areas, scenic river areas, and recreational river areas. The classifications serve as baseline land use description and help guide management activities. Comprehensive river management plans for wild and scenic rivers are to be developed within 3 years of designation.

There are currently no rivers in the RFO area that have completely undergone the Wild and Scenic Rivers designation process. The RMP will address the suitability of the rivers for designation, as well as any rivers that have not had an eligibility review.

Areas of Critical Environmental Concern

An ACEC is defined in the FLPMA, Public Law 94-579, Section 103(a) as an area within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards. BLM prepared regulations for implementing the ACEC provisions of FLPMA. These regulations are found at 43 CFR 1610.7-2.

The restrictions that arise from an ACEC designation are determined at the time the designation is made, and are designed to protect the values or serve the purposes for which the designation was made. In addition, ACECs are protected by the provisions of 43 CFR 3809.1-4(b)(3), which requires an approved plan of operations for activities under the mining laws except casual use.

BLM Backcountry Byways

BLM Backcountry Byways are components of the National Scenic Byway system. The Scenic Byways program was established by the U.S. Department of Transportation in 1991. Roads may be recognized as scenic byways based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. Designation and management can occur at local, State, or national levels. BLM Backcountry Byways are a system of low-standard roads that pass through public lands with high values in the categories listed above. In the RFO, the Bull Creek Pass National Backcountry Byway has been designated and is managed as a Backcountry Byway (see Map 4).

Wilderness and Other Special Designations—Resource Condition

This section addresses specially designated and managed areas. These areas include a variety of designations, including wilderness, Wild and Scenic River, ACEC, Backcountry Byways, and National Landmarks. Special management areas that are closely tied to other resources, such as SRMAs, are addressed in the section with which they are associated.

Wilderness Study Areas

WSAs contain wilderness characteristics and are managed to preserve those values until Congress either designates them wilderness or releases them for other uses. This applies to the 11 WSAs in the RFO. A discussion of the current resource values and uses found in each WSA, established in 1980 under the

authority of Section 603 (c) of FLPMA, can be found in the Utah BLM Statewide Wilderness Final Environmental Impact Statement.

Non-WSA Lands with Wilderness Characteristics

The resource condition of each area is described below. This includes discussion of the current resource values and uses that are present in each of the areas. This information will help set the stage for the development of alternatives in the RMP.

See the 1999 Utah Wilderness Inventory and the RFO Revisions to the 1999 Utah Wilderness Inventory for documentation of the wilderness characteristics of the wilderness inventory areas discussed below.

Bull Mountain

Bull Mountain is located in Garfield County in the northern portion of the Henry Mountains. It is an extension of the much larger Bull Mountain WSA. This area contains the drainages of both Poison Spring Canyon and Butler Wash. The topography is broken by numerous washes and canyons of varying depths and widths. The terrain is transitional between the Bull Mountain Igneous Intrusion and the red canyons of the Morrison formation found at the lower elevation. Several of the canyons to the east offer striking visual contrasts to the cliff faces and mountain peaks of the Bull Mountain WSA. The vegetation is pinyon and juniper woodland, with sagebrush and other desert shrubs located on the bench lands.

A road extending to the stock pond located just east of Twin Seeps has been cherry-stemmed out from the unit. There are numerous naturally revegetating vehicle ways and a few old mining scars, which are barely visible. About 100 acres in the southeastern region of the area have been excluded as a result of prior mining exploration impacts. Cattle graze the area. There are two State lands parcels, which are adjacent to the area.

The area is also used by permittees who operate wilderness therapy programs for troubled youth in the backcountry. These programs also do service projects for BLM. These youth groups operate in the remote backcountry for extended time periods using minimum impact overnight and semipermanent camps.

Bullfrog Creek

Bullfrog Creek is in southeastern Garfield County approximately 10 miles northwest of Bullfrog Basin Marina on Lake Powell. Long Canyon is adjacent to the west of this area; the Mount Pennell WSA is adjacent to the north. The terrain consists mainly of a large, deep canyon system and the extensive Clay Point and Saleratus Point mesa tops, as well as the lower portion of the extensive Bullfrog Creek drainage system.

There is a maintained vehicle route on the mesa end of Saleratus Point, a short spur road near Eggnog, a maintained spur road leading to Clay Seep, and several short spur roads to overlooks along the Burr Trail. There are also some scattered vehicle tracks that are remnants of old seismic exploration and which have substantially revegetated. Recreation use is very low as a result of the remoteness of the area. The entire area is grazed by cattle. There are two State lands parcels, which are in-holdings, and five State lands parcels.

The Clay Point area is a popular rock-hounding destination. The Henry Mountain MFP recognized the area for petrified wood and called for continued access to these collection areas.

In addition to the above resources, wildlife resources are present as well. The area has been determined as critical habitat for the Mexican spotted owl. There is some habitat for bison and deer in the upper elevations. Both are important species in the region.

Dirty Devil—French Spring

Dirty Devil is located southeast of Hanksville in Wayne and Garfield counties. The area is an extension of the existing Dirty Devil and French Springs-Happy Canyon WSAs. This relatively large area contains portions of the Dirty Devil river watershed and its associated bench lands, including Sams Mesa, Bert Mesa, and the Big Ridge. The area is remote and criss-crossed with deeply incised canyons, creating a landscape of topographic extremes. The boundaries use mostly distinct roads.

The Dirty Devil area has a rich prehistory and history, with archeological resources in the area being particularly impressive. The area also has the last hideout of the notorious Wild Bunch from more than a century ago.

The Beaver Canyon Wash ACEC is included in the WSA, and portions of the ACEC are also outside the WSA and were evaluated and found to have wilderness characteristics. This ACEC was established for its pristine riparian condition. The area is not grazed by cattle.

There is an old and seldom-used airstrip at Angel Point, which is located mostly on a State Lands Parcel with some located on BLM lands. Another airstrip is located on public lands on the Big Ridge. The Robbers Roost Ranch is a private in-holding and has an airstrip that is unused. The Happy Canyon airstrip is located on State lands; it is used occasionally. There is interest in oil and gas leasing around the area.

In addition to the above resources, there are wildlife resources in this area as well. The area has been determined as critical habitat for the Mexican spotted owl. There are several other special status species present, including the federally listed Wright's Fishhook Cactus and desert bighorn sheep.

Dogwater Creek

Dogwater Creek is in northern Garfield County approximately 18 miles south of Utah State Highway 24 and west of Notom Road. Capitol Reef National Parks Red Canyon unit is adjacent to the area and has been administratively endorsed for wilderness designation. The topography consists of rolling foothills of the eastern slope of the Water Pocket Fold. The area is sparsely vegetated with scattered juniper trees and desert-type shrubs such as Mormon tea, rabbit bush, and black brush. Cottonwoods are found along Oak and South Coleman creeks, which bisect the area.

The area that was evaluated is located in two distinct units, which are separated by private lands. The smaller northern unit is approximately 300 acres. The larger southern unit is approximately 3,500 acres in size. A stock pond, a fence, and an old seismic line are within the boundary but are substantially unnoticeable.

Private lands and a road form the northern boundary of the area, the eastern boundary is along Notom Road, and the southern boundary follows the NPS/BLM property line.

In addition to the above resources, there are wildlife resources in this area as well: It has been determined as critical habitat for the Mexican spotted owl.

Fiddler Butte

Fiddler Butte is located in Garfield County approximately 18 miles southeast of Hanksville. The Fiddler Butte area is a contiguous extension to the west of the Fiddler Butte WSA. Vegetation communities above the canyons are sagebrush and black brush grasslands, with scattered stands of pinyon and juniper at the higher elevations and along the canyon breaks near Cedar Point. Riparian species include Fremont cottonwood, willow, common reed grass, and tamarisk. The topography consists mainly of broken canyon country and the upper reaches of major canyons within the Fiddler Butte area. The area also contains bench lands between roads and the canyon breaks on Cedar Point.

The area is bounded on the east by the Fiddler Butte WSA, on the north by the Poison Springs canyon road, on the south by Utah State Highway 95, and on the west by a combination of vehicle routes.

Numerous old seismic lines extend through the area, most of which are naturally revegetating. A short spur route along the western side, running from Turkey Knob Road to a spring development and livestock watering area, has been cherry-stemmed.

Some dispersed camping occurs along the Poison Spring canyon road, which is a popular backcountry touring route between Highway 95 and Glen Canyon NRA.

In addition to the above resources, there are wildlife resources as well. The area has been determined as critical habitat for the Mexican spotted owl. The area is also a relocation area for desert bighorn sheep.

Fremont Gorge

Fremont Gorge is located in western Wayne County just east of the town of Torrey. It is an extension of the both the contiguous Fremont Gorge WSA and a portion of Capitol Reef National Park that has been administratively endorsed for wilderness designation by the NPS. The Fremont River flows from west to east through a deep scenic gorge. Vegetation consists of pinyon and juniper, scattered ponderosa pine, and high desert shrub species. The Fremont River supports a riparian corridor.

The area is in a natural character and offers outstanding opportunities for solitude and primitive recreation. Scenery in the Fremont Gorge in particular is spectacular. This portion of the Fremont River was recommended as eligible for wild and scenic river status in 1991 through a previously unfinished planning process.

The ridge tops and bench lands of Miners Mountain east of Carcass Creek and Sulphur Creek contain impacts from ongoing and past firewood cutting and Christmas tree harvesting, some old survey lines and old chaining projects. (This area was designated as the specific woodcutting area, and the remainder of the BLM lands covered by the Parker Mountains MFP are closed to both firewood cutting and Christmas tree harvesting.) A small area located near Utah State Highway 24 in the vicinity of Calf Creek has been excluded because of numerous dispersed recreation sites and a commercial flagstone quarry operation. An additional community rock quarry site located along Beas Lewis Flats Road has also been excluded from the area being considered. Livestock graze the area, and several stock ponds and vehicle routes support the grazing operation. They have been excluded as well.

The area is split into two separate portions by a State land parcel. Two additional State land edge-holdings and several parcels of private land are adjacent to the area, but they were not considered.

Sensitive wildlife species found here include the Southwestern Willow Flycatcher. The adjacent NPS lands have also been designated as an Important Bird Area (IBA).

Horseshoe Canyon (South)

Horseshoe Canyon (South) is adjacent to both Canyonlands National Park's Horseshoe Canyon Unit and the Glen Canyon NRA. The NPS unit has been administratively endorsed for wilderness designation. The area is located in northeastern Wayne County approximately 40 miles south of the town of Green River and 25 miles east of Hanksville. The area has a diverse combination of incised sandstone canyons and rugged bench lands and includes the headwaters and entire upper drainage of Horseshoe Canyon. The area is essentially an extension of the WSA.

Culturally significant Barrier Creek flows through Horseshoe Canyon, the largest side canyon of the Green River's Labyrinth Canyon. Vegetation above the canyon bottoms is predominantly sagebrush and black brush grasslands with scattered stands of pinyon and juniper at the higher elevation and along the canyon breaks. Riparian species in the canyons include Freemont Cottonwood, willow, common reed grass, and tamarisk.

Grazing continues throughout the region, although many areas remain largely ungrazed because of a lack of access and reliable water sources. There is interest in oil and gas leasing around the western edges of the area. The widely scattered old seismograph lines are screened by vegetation and topography. Most have revegetated and are nearly obliterated by shifting and blowing sand and erosion. Most range developments and access to them have been cherry-stemmed from the area being considered.

The Twin Corrals site in the Horseshoe Canyon WSA is a popular recreational destination. The access road and some undeveloped camping occur in cherry-stemmed portions of the area. The area also contains significant cultural resources associated with the canyon's prehistoric rock art and archeological sites.

The area provides habitat for a wild burro herd that is contained within the Canyonlands HMA. In addition to the above resources, there are wildlife resources in this area as well. It has been determined as critical habitat for the Mexican spotted owl. It is also a designated release point for desert bighorn sheep.

Jones Bench

Jones Bench is in the southeastern corner of Sevier County. The area is contiguous with two Capitol Reef National Park units that have been administratively endorsed for wilderness designation. Fishlake National Forest is approximately ¼ mile from the western boundary.

Capitol Reef National Park forms the southern boundary, the Cathedral Valley Road forms the eastern boundary, privately owned ranch lands are adjacent to the north, and the west side follows a wash.

Sagebrush and rabbit bush are found on the desert floor, whereas pinyon and juniper woodlands are on the mesa tops and near the forest boundary. Small rolling hills, typical of the badlands in this region, sit at the base of vertical cliffs. Scattered miniature pinnacles break the lower landscapes into intriguing formations similar to Capitol Reef National Park's Cathedral Valley.

Primary uses of the land include grazing and recreation. The adjacent Capitol Reef National Park is a popular destination. There is one access route and a buried pipeline for the grazing operation located along the northeastern side. There is a coral and stock pond located near the northern boundary.

Labyrinth Canyon

The area is located in northeastern Wayne County and extends into southeastern Emery County, about 15 miles south of Green River. The area extends from the RFO north into the Price Field Office and across the river into the Moab Field Office. The area is composed of Labyrinth Canyon of the Green River,

benches, rims, and side canyons of the Green River. Labyrinth Canyon is a steep-walled sandstone canyon. The area includes diverse habitats, including an extensive riparian area along the river and in the side canyons, sagebrush and black brush on the benches above the canyon, and pinyon and juniper trees at the highest elevations.

The area is natural, wild, and remote, and provides outstanding opportunities for both solitude and primitive and unconfined recreation. The requisite wilderness values are supplemented by historic sites, prehistoric sites, endangered fish, and Threatened and Endangered, and sensitive wildlife. The area is also contiguous to the Horseshoe Canyon (North) WSA and the Horseshoe Canyon unit of Canyonlands National Park. The southwestern and northern portions of the area are grazed by livestock. Visitors explore the area by vehicle, mountain bike, foot, and boat. Floating Labyrinth Canyon and hiking its side canyons are popular recreation activities in this area. There is interest in oil and gas leasing around the western edges of the area. Desert bighorn sheep inhabit the area, which is rich in cultural and historical resources.

Limestone Cliffs

Limestone Cliffs is located in the southeast corner of Sevier County, with two small parcels extending into Emery County. The area has deeply incised canyons, including Temple Wash, Solomon Creek, and Last Chance Creek; rugged terrain; and moderate to dense stands of pinyon and juniper.

Privately owned Last Chance Ranch skirts the east-central boundary. The area is bordered on the west by a roadless section of Fish Lake National Forest, separated from it by a little used vehicle way known as the Jims Farm Road. Utah State Highway 72 borders the area along the northwest for approximately 2 miles. The remainder of the area is bordered by county-maintained roads. Two parcels of private land (Last Chance Ranch) and an access road have been cherry-stemmed out of consideration. There are additional parcels of private land along the northwest and southern boundaries. There are six parcels of State Lands located on the edges of the area. A corral, a short vehicle route, some coal stockpiling, and an old foundation are adjacent to the north boundary. Two vehicle ways are located inside the area. Numerous stock ponds are scattered through the area. An old juniper chaining, a pipeline, and several corrals are found near the western side by Sign Board Flat.

Selenite (a gypsum crystal) is a favorite mineral collected by rock-hounders in the southern area near Camper Springs. The other major recreational activity is vehicle touring on the maintained roads.

The area is also used by permittees who operate wilderness therapy programs for troubled youth in the backcountry. These programs also do service projects for BLM. These youth groups operate in the remote backcountry for extended periods of time using minimum impact overnight and semipermanent camps.

A number of special status species are present, including several Threatened and Endangered species.

Cultural resources include rock art panels and lithic scatters.

Little Rockies

The Little Rockies area is an extension of the existing Little Rockies WSA. It is located in Garfield County approximately 30 miles southeast of Hanksville between Utah Highways 276 and 95. The area is situated on the north, west, and southwest flanks of the Little Rockies Mountains. The terrain consists of rolling, open hills with widely scattered out-croppings of rock to deeply incised sandstone canyons. Vegetation is sparse with scattered junipers and desert shrubs species (sage, black brush, and Mormon Tea) on the higher terrain, and cottonwood, tamarisk, and willow in canyon wash riparian areas.

A few roads extend into the area from Utah State Highway 276 and from a county-maintained road along the southern boundary. These have been cherry-stemmed out of the area. These routes lead to several range developments, small stock reservoirs, and old mining claims. There are several old seismic lines that have revegetated.

Part of the area is contiguous to the Little Rockies NNL. The existing Henry Mountains MFP stipulates that should the WSA not be designated as a wilderness, it would be designated as an ACEC. The purpose of the NNL is to recognize unique geological and wildlife values. The area has regions of culturally significant prehistoric sites throughout it. The area has been determined as critical habitat for the Mexican spotted owl near its northern boundary.

Long Canyon

Long Canyon is in southeastern Garfield County, about 11 miles northwest of the Bullfrog Basin Marina on Lake Powell. The area is contiguous with the Capitol Reef National Parks Wagon Box Unit, which has been administratively endorsed for wilderness designation.

The Burr Trail, a county-maintained road, forms the northeastern side boundary. The remainder of its eastern boundary is formed by two other maintained roads, one around the perimeter of Big Thompson Mesa and the other on the east side of Middle Point (leading to Utah State Highway 276 and Lake Powell).

The area has, on its own merits, outstanding opportunities for solitude because of its remoteness. The adjacent NPS unit enhances these opportunities. The area also has opportunities for primitive and unconfined recreation, principally hiking and backpacking in Long Canyon. Use levels are currently low.

The area is grazed by livestock, and several substantially unnoticeable stock ponds and vehicle ways are present to support operations. Several other grazing facilities (stock ponds and vehicle routes) have been excluded from the area being considered because they are substantially noticeable. There is a State lands parcel, which is adjacent to the area, and another, which is an in-holding.

In addition to the above resources, there are wildlife resources in this area as well. The area has been determined as critical habitat for the Mexican spotted owl.

Mount Ellen—Blue Hills

The Mount Ellen—Blue Hills area is in south-central Wayne County and northeastern Garfield County, and is about 10 miles southwest of the town of Hanksville and about 2 miles east of Capitol Reef National Park. The area is composed of several units adjacent to the Mount Ellen—Blue Hills WSA and which are extensions of it. The area has a diverse range of terrain, vegetation, and elevation. The area has alpine tundra vegetation at the higher elevations, Montane communities and pinyon and juniper woodlands at the middle and lower elevations, and some badlands along the west and north sections.

The area is natural in character and offers outstanding opportunities for solitude and primitive recreation. Supplemental values include sweeping panoramic vistas, and the mountain slopes support a free-roaming bison herd.

Several roads have been cherry-stemmed from the area that was considered. The viewing and hunting of deer and bison are major recreational activities. The bison herd is the only wild-ranging and hunted herd in the United States, and the deer herd is designated by the State of Utah as the premier hunting unit in the State. The RFO issues numerous guide permits for the hunters. Dispersed camping sites are spread around Apple Bush Flats and Stevens Mesa, and are commonly used by hunters. There are numerous

grazing developments, and cattle graze the entire area. Allocation amounts for grazing forage for bison and cattle is a management issue. The northern portion of the area's boundary follows several miles of the Fremont River, which is under review for potential eligibility status as a wild and scenic river. There are five State in-holding parcels and four State parcels on the perimeter of the area.

The area is also used by permittees who operate wilderness therapy programs for troubled youth in the backcountry. These programs also do service projects for BLM. These youth groups operate in the remote backcountry for extended periods of time using minimum-impact overnight and semipermanent camps.

The area in the past has had some exploration and leasing for oil and gas development, as well as coal. There are no leases presently. The Jet Basin area has been recognized as a recreational mineral collection area for jet, which is a lignite coal. Under the existing Henry Mountains MFP, the RFO does not issue commercial permits for jet because this is the best site in the United States.

In addition to the above resources, wildlife resources also exist in this area. The Mexican spotted owl has critical habitat along the western boundary of the area. Two Federally listed Threatened and Endangered cactus species are found in the area. Part of the Bull Creek Archeological District is within the area. This designation was established in the MFP for protection of cultural resources found in the area.

Mount Hillers

Mount Hillers is located in Garfield County about 35 miles south of Hanksville. The area is composed of several discrete parcels that are extensions of the Mount Hillers WSA and that are essentially lower elevation slopes of Mount Hillers itself. The area contains pinyon and juniper woodlands with open areas of grass and shrubs, scattered Douglas fir near Cass Peak in the northwest, and some Gambel's oak.

The area is used for a variety of recreational activities, livestock grazing, and university-level geology field schools. Part of the area is adjacent to the private Gold Creek residential development, located on State lands. The road that leads to the residential development and continues past it into the area considered has been cherry-stemmed. The remainder of the boundary follows maintained vehicle roads or property lines.

There is a parcel of private land and a parcel of State land adjacent to the northern side of the area, and the southern parcel is sandwiched between two State land parcels.

Mount Pennell

The area is located in Garfield County about 30 miles south of Hanksville. Mount Pennell is the second highest peak (11,371 feet) in the Henry Mountains. The Mount Pennell area consists of numerous extensions of the existing Mount Pennell WSA. The area has a diverse combination of high-elevation pinyon and juniper woodlands, incised sandstone canyons, expansive mesas, colorful badlands, and rugged bench lands. The area includes the headwaters and entire upper drainages of numerous washes and creeks. When combined with the existing Mount Pennell WSA, the area is large, about 14 miles south to north and 12 miles wide. The badlands in the southern portion is a stark, expansive landscape of rolling and rugged blue-gray mancos shale that spreads from the foothills of Mount Pennell south to Clay Point and west to Bullfrog Creek. The northern portion contains part of Tarantula Mesa. Tarantula Mesa and the Pennell Creek Roughs, just south of No Mans Mesa, are rugged bench lands at middle elevations. Vegetation ranges from annual and perennial grasses with scattered shrubs of shadescale and black brush at lower elevations to pinyon and juniper woodlands, scrub oak, and small stands of aspen, ponderosa pine, and Douglas fir at higher elevations.

No Mans Mesa has been proposed as an ACEC for its unique relic vegetation, and its suitability will be addressed in the RMP. The region around Tarantula Mesa is critical habitat for bison. Bison hunting and viewing is a major component of recreational activities. The area also supports the premier deer hunting unit in Utah. Vehicle routes into Tarantula Mesa and Cave Flat have been cherry-stemmed. The area is also used by permittees who operate wilderness therapy programs for troubled youth in the backcountry. These programs also do service projects for BLM. These youth groups operate in the remote backcountry for extended periods of time using minimum-impact overnight and semipermanent camps.

Five State lands parcels are in-holdings, and numerous others are adjacent to the area.

Portions of the area, at Tarantula Mesa and along the southwestern boundary, have been determined as critical habitat for the Mexican spotted owl.

Muddy Creek—Crack Canyon

The majority of this large area (125,709 total acres) is located in southwestern Emery County south of I-70 and is contiguous to the Muddy Creek and Crack Canyon WSAs. RFO administers 61,896 acres in Wayne County. The southern boundary of the area is located along Utah State Highway 24. The North Caineville road bisects the area in Wayne County and ends at its junction in Coal Wash with Factory Bench Road. The southwestern boundary is the Cathedral Valley road to its junction with the North Caineville road.

The area is about 50 miles southwest of Green River and 10 miles north of Hanksville. The terrain varies greatly, exhibiting many types of topography and geologic strata in the canyon country of Utah. Visitors are often awed by the moonscape of the mancos shale and the multicolored bentonite hills. Vegetation varies from nonexistent, to desert shrubs and grasses, to pinyon/juniper forest, to riparian vegetation along canyons and wash bottoms.

The North Caineville Mesa has been designated as an ACEC for its relic vegetation community. Access to the top of the mesa is extremely difficult and is only passable by foot and after a strenuous climb. Factory Butte is one of the most photographed features in the region. The Mancos Badlands are the most developed and best examples found in the Colorado Plateau.

Livestock graze the area, and there is the associated need for occasional maintenance of fences, waters, and other facilities. There is an existing dead-end vehicle route constructed during a coal power plant proposal, which has been cherry-stemmed from the area.

The RFO portion of the area is "open" to OHV use, and use in the RFO is spilling over into the Price Field Office. The Price Field Office, however, manages OHV use as "limited" to designated roads and trails. A consistent approach to OHV management needs to be developed in each field office resource management plan. The RFO has a designated OHV management area located in close proximity to the area under consideration in the southeastern corner. OHV use in this area has been fluctuating and is currently at approximately 500 visits/year. There are no facilities, but the OHV area is used as a staging base for extended tours throughout the region. Much of this area is accessed by OHVs.

A 13,060-acre Special Management Area was established in the 1983 Henry Mountains MFP, which encompasses the North Caineville Mesa and Factory Butte. Monitoring is conducted for OHV impacts to visual, vegetation, and soil. Two lawsuits are currently pending regarding the OHV use. The RFO has signed numerous user-created trails in the region around Factory Butte and has asked OHV users to voluntarily use them and avoid cross-country traffic.

The area is also used by permittees who operate wilderness therapy programs for troubled youth in the backcountry. These programs also do service projects for BLM. Further, there is great interest from hiking and wilderness groups.

There are many cultural resource sites (rock art panels and lithic scatters) throughout the area. The Muddy Creek/Crack Canyon country is home to a healthy herd of desert bighorn sheep. The herd is a source for transplants, and occasional capture operations have been conducted in Emery County. Muddy Creek is an eligible wild and scenic river in Emery County to the road crossing at Muddy Creek, but a final determination has not been made for the segment in Wayne County.

There is an old and reclaimed town dump located adjacent to the southwest corner of the area by the intersection of North Caineville Road and Utah Highway 24.

A number of special status species are present, including two federally listed Threatened and Endangered cactus.

Mussentuchit Badlands

This area is located about 6 miles south of I-70 in Emery County. A small portion of the area extends into Sevier County and the RFO. Much of the area includes the Mussentuchit Badlands, an extremely rugged labyrinth of washes, draws, ravines, and gullies. The relatively flat and rolling lands of Blue Flats occupy the western portion of the area. Some of the area is barren, but sparse vegetation, mostly desert shrubs and grasses, covers much of the landscape. Some pinyon and juniper dot the higher elevations, and an occasional cottonwood and tamarisk are found in the washes and near stock ponds.

The area is natural in character and offers outstanding opportunities for both solitude and primitive recreation. Supplemental values include interesting geologic formations, fossils, and cultural resource sites. There is active paleontological excavation in the northwest corner of area. Livestock graze the area, and most grazing facilities are at the ends of cherry-stemmed routes. Wild horses also use the area, but there are no gathering operations. There is a bentonite mine on a cherry stem in the southwest part of area, and surrounding claims are located in the area. Small numbers of OHVs drive the dunes adjacent to the eastern edge of the area and drive cross-country in the Morrison formation on the Blue Flats. The Blue Flats are not an "open" OHV area. Overall, this is a remote, lightly visited area. Cultural resources include rock art panels and lithic scatters. The area includes some interesting geology.

The backcountry is also used by permittees who operate wilderness therapy programs for troubled youth in the backcountry. These programs also do service projects for BLM. These youth groups operate in the remote backcountry for extended periods of time using minimum-impact overnight and semipermanent camps.

Notom Bench

The area, located in both Wayne and Garfield counties, is about 6 miles south of Utah State Highway 24 and west of Notom Road. The area is in two separate units, which are both contiguous with a portion of Capitol Reef National Park, which has been administratively endorsed for wilderness designation by the National Park Service. In combination with the NPS lands, the Notom Bench area has outstanding opportunities for primitive and unconfined recreation; hiking takes place in the drainages and deeply incised canyons that access popular NPS recreation areas. The area also has outstanding opportunities for solitude in conjunction with the NPS lands and because of its own vegetation and topographical screening.

Topography mostly consists of rolling foothills along the eastern slope of the Water Pocket Fold. Vegetation ranges from scattered juniper trees on the upper slopes to desert shrubs such as black-bush and Mormon Tea on the lower bench lands. Cottonwoods are found along the washes in the Cottonwood, Burro, Sheets, and Fivemile creeks, which bisect the larger southern unit.

The small northern unit (app. 873 acres) is bordered on the north and some of the east by private lands, and it is separated from the larger southern unit by several roads and numerous popular dispersed camping sites. The eastern and southern boundaries of the larger southern unit follow maintained roads and/or a power line Right-of-Way. The two State lands parcels adjacent to each other are in-holdings in the larger unit.

There is some evidence of OHV use in the vicinity of Cottonwood Creek and the bench lands adjacent to Notom Road, but use has decreased significantly since the road was paved and hardened parking areas were established in 2002. Livestock graze the area, but there are no permanent developments other than a small pasture fence. There is an old and naturally revegetated section of a seismic line that is approximately 0.75 miles in length.

In addition to the above resources, there are wildlife resources in this area as well. The Mexican spotted owl has critical habitat requirements overlying the entire area.

Ragged Mountain

Ragged Mountain is located in north-central Garfield County. It is about 20 miles south of Hanksville and 5 miles west of Utah State Route 276. The area includes an eastern portion of the Henry Mountains Range. Ragged Mountain (9,113 feet) is located on the southeast flanks of Mount Ellen. Ragged Mountain itself consists of ragged rock outcropping. Vegetation is as diverse as the terrain. Sagebrush, black brush, Mormon Tea, grass, and scattered juniper cover the hills, whereas cottonwood, tamarisk, and willow dominate the canyon riparian areas. Occasional stands of large ponderosa pine, Douglas fir, and aspen occur in the higher drainages, whereas low shrubs and scrub oak are found at the highest elevations. A free-roaming bison herd uses portions of the unit seasonally.

The Bull Creek Pass National Backcountry Byway circumnavigates the area and forms the boundary in some regions. In other areas, the boundary follows the extent of impacts from prior habitat manipulation projects and mining activities. Several vehicle routes access range developments along the western boundary and have been cherry-stemmed.

The area is also used by permittees who operate wilderness therapy programs for troubled youth in the backcountry. These programs also do service projects for BLM. These youth groups operate in the remote backcountry for extended periods of time using minimum-impact overnight and semipermanent camps.

Red Desert

Red Desert is in Wayne County, 1 mile northwest of the town of Caineville. Capitol Reef National Park is to the west, and Utah State Highway 24 is to the south. The terrain consists of a domed anticline and small rocky canyons. Entrada sandstone cliffs tower over the desert floor, which is surrounded by rolling bentonite hills striped in blues, grays, and reds. The badlands contain little vegetation. However, tamarisk is found along wash bottoms and scattered grasses and fishhook cactus are found throughout the area. Scattered juniper is found in the wetter areas of the low-lying hills.

Red Desert is contiguous to a portion of Capitol Reef National Park that has been administratively endorsed for wilderness designation. Hartnet Road and Cathedral Valley Road form the area's

northeastern and southwestern boundary, whereas the east boundary is formed by Utah Highway 24 and North Caineville Road. There is a section of private land adjacent to the southern boundary. Also, all or portions of eight State Lands Parcels are adjacent to or surrounded by the area.

Four water wells, a pipeline, and several branching access roads have been excluded from consideration because these facilities are critical for the local community of Caineville. Grazing activities and facilities such as fences, water developments, and minor vehicle ways occur throughout the area. They are substantially unnoticeable but require routine access.

A number of special status species are present, including Federally listed cactus species and two fish species.

Wild Horse Mesa

The area is located in northern Wayne County, about 10 miles north of Hanksville, and extends into southern Emery County. Goblin Valley State Park is adjacent to the northeast corner of the area. This is a diverse area with a variety of topographic and geologic features. Formations include goblins, domes, and striated vertical cliffs. Numerous canyons, drainages, and badland areas add to its topographic diversity. Deep canyons cutting through the badlands create colorful "moon-like" effects. The goblin formations resemble those found in the adjacent State park. The lower reaches of Muddy Creek, near its confluence with the Fremont River, flow through the area. Vegetation is generally sparse throughout the inventory area. In areas where it is more abundant, it is comprised of scattered grasses, low shrubs, and a few juniper trees.

The area retains its natural character and provides outstanding opportunities for both solitude and primitive forms of recreation. Supplemental wilderness values include geologic features, paleontological resources, and opportunities for geologic study. Livestock graze in the area, and the associated facilities (fences, a pond, etc.) require maintenance from time to time. There are remnants of old mining operations in the northwestern portion of the area. Mining is currently inactive. Recreation activities include OHV driving and camping, and visitors to Goblin Valley State Park spill over onto public lands. Temple Mountain/Goblin Valley Road is designated a Utah Scenic Backway.

There are active humate mining operations along Factory Bench Road. Recreation interest in the area also varies, and there is OHV use of the Cowdung Reservoir route in the southeastern part of the area. OHV use is continuing below the Skyline Rim, but at a somewhat reduced level than previously. Destination sites include the Skyline Rim overlook and the Cowdung Reservoir road. Along the Cowdung Reservoir road, there is a recognized opportunity for fossil and rock collection. Representatives of the Carnegie Museum, after examining the outcrops, consider it to be a potential world-class depository. Vertebrate fossil collection in this area is a management issue. Fossil collection in the region having oyster shell formations is popular. The Mars Station, an experimental research facility operated by a nonprofit group, is adjacent to the area on State lands and also attracts visitors. Visitors on their way to and from Capitol Reef National Park and Lake Powell also stop and enjoy the region. Hanksville has a shooting range adjacent to the area near the town.

There is a backcountry airstrip at the unused Coal Mine Wash adjacent to the area. Hanksville Airport is adjacent to the area in the southeast corner of the unit, but is excluded from it.

The area is also used by permittees who operate wilderness therapy programs for troubled youth in the backcountry. These programs also do service projects for BLM. These youth groups operate in the remote backcountry for extended periods of time using minimum-impact overnight and semipermanent camps.

The area also contains the Federally listed Wright's Fishhook Cactus.

Non-WSA Lands Likely to Have Wilderness Characteristics

The proposal areas listed below have been evaluated by BLM and determined likely to have wilderness characteristics.

Flat Tops

This 33,690-acre area is located in the San Rafael Desert in southern Emery County and extends into Wayne County and the RFO. Most of the area (26,070 acres) is in the RFO. The Flat Tops, one of the most recognizable landforms in the area, is located in the northern part of the area. Other topographic features include Spire Point, Buck Canyon, and Point of Rocks. Dunes, native grasses, and many washes lie between the Flat Tops in the north and Point of Rocks in the south. BLM has reviewed the information presented in the UWC wilderness proposal and determined it is likely that 33,690 acres have wilderness characteristics.

The area is grazed by livestock. Many of the grazing facilities are cherry-stemmed out of the area, but will require periodic maintenance. The Flat Tops are an established ACEC, which are managed by the Price Field Office and which were designated for relict vegetation communities present on the tops of the mesas that are ungrazed by livestock.

Sweetwater Reef

The UWC's Sweetwater Reef proposed wilderness unit is located in the San Rafael Desert east of Highway 24, west of the Green River in Labyrinth Canyon, and south of the UWC's proposed San Rafael River wilderness unit. Most of this 79,470-acre area is located in Emery County. A small portion (7,148 acres) extends into Wayne County and the RFO. The Sweetwater Reef, a high sandstone escarpment, is the main topographic feature in the area. BLM has reviewed the information presented in the UWC wilderness proposal and determined there is a reasonable probability that the entire area "may have" wilderness characteristics.

Wildhorse Mesa

The UWC wilderness proposal, a total of 11,510 acres, includes two additions to the BLM Wildhorse Area. The first area is adjacent to the northeastern portion of the BLM Wildhorse Area between the inventoried area and Highway 24. The second is adjacent to the southwestern portion of the BLM area above and below Skyline Rim. The portion of the UWC proposal in the Price Field Office (8,510 acres) includes the flats below the cliffs of Goblin Valley State Park and the BLM Wilderness Inventory Area. Dunes and badlands are common. Recognizable topographic features include Molly's Castle, Well Draw, and goblins like those found in the State park. BLM has reviewed the information presented in the UWC wilderness proposal and determined there is a reasonable probability that the area in the Price Field Office "may have" wilderness characteristics. RFO manages 2,990 acres of this proposal area.

See the Wild Horse Mesa Wilderness Inventory Area section above for a discussion of the existing lands uses and resource values in this UWC proposal area.

Rock Canyon

The UWC's Rock Canyon proposed wilderness unit is located south of I-70 in Emery County. It is on the western edge of the San Rafael Swell, about 8 miles south of Emery. The proposed unit is surrounded by the BLM's Upper Muddy Creek Area on the east, the Mussentuchit Badlands Area on the south, and the Limestone Cliffs area (RFO) on the west. Though the entire proposal is 32,160 acres, only a small

portion at the western extent of the western portion of this 18,000-acre proposal extends into Sevier County and the RFO. Rock Canyon runs through the center of the area, and the dark gray mancos shale of Mesa Butte dominates the northeastern portion of the unit. Although some of the proposed unit is barren of vegetation on the mancos shale, most of the area supports desert shrubs and grasses. Pinyon/juniper woodlands are scattered around the unit and clustered on canyon rims. BLM has reviewed the information presented in the UWC wilderness proposal and determined there is a reasonable probability that the entire area "may have" wilderness characteristics.

Wild and Scenic Rivers

BLM has considered all named rivers and streams in the RFO for wild and scenic river eligibility. A preliminary report has been prepared and has been circulated for public comment.

A number of streams and rivers in the RFO reviewed for wild and scenic river eligibility, suitability, and tentative classification determinations have been identified. Segments of some streams and rivers in the area may meet the criteria for eligibility and suitability. Eligibility and suitability determinations will be examined as part of the planning process.

The existing data will continue to be evaluated to determine if the resource values are present and are still relevant. Table 3.16-4 identifies a preliminary list of the existing river segments, and their sources, that need additional evaluations. Additional river segments may be included, or some of the river segments may be dropped from further consideration based on the results of the review to date or additional information submitted in the planning process.

Table 3.16-4. River Segments Needing Additional Evaluations

River Name	Reason for Consideration	Segment Description
Larry Canyon	D	Entire segment to confluence with Dirty Devil River
Sam's Mesa Box Canyon	D	Entire segment to confluence with Dirty Devil River
Twin Corral Box	D	The Pinnacles to confluence with Dirty Devil River
Maidenwater Creek	D	T. 33 S R. 12 E sec. 33 to T. 33 S R. 12 E sec. 36
Barrier Creek (includes Trail Spring and Spur Fork)	D, E	Headwaters to Green River, entire tributaries Spur Fork and Trail Spring
Beaver Wash Canyon	D	T. 29 S R. 12 E Sec. 36 to confluence with Dirty Devil River
Dirty Devil River	A, B, D, E	Highway 24 bridge to Lake Powell
Fremont River	B, D, E	Highway 12 to west boundary of Capitol Reef National Park
Fremont River	D	Below Mill Meadow Reservoir to the boundary of public lands
Happy Canyon – includes South Fork, Main Fork, and French Spring Fork	D, E	Segment from State lands to confluence with Dirty Devil River
Pine Creek	D	Public lands in three discrete sections
Robber's Roost—includes White Roost, Middle Fork, and North Fork canyons	D, E	Entire segment with three tributaries to confluence with Dirty Devil River
No Man's Canyon	D	Entire segment to confluence with Dirty Devil River

Sources of Potential Eligible Rivers:
A—Nationwide Rivers Inventory
B—American Rivers Council Outstanding Rivers List
C—1970 USDA/USDI List
D—Officially identified by Federal agencies, State, Indian tribes, other local governments
E—Identified in public scoping during the RMP process

Areas of Critical Environmental Concern

There are currently four ACECs in the RFO (Map 4). The size of each area and the value(s) it is designed to protect are listed in Table 3.16-5. The values for which these four ACECs were designated are still present and require continued management attention.

Table 3.16-5. Areas of Critical Environmental Concern

ACEC	Area (in acres)	Values
North Caineville Mesa	2,200	Relict vegetation
South Caineville Mesa	4,200	Relict vegetation
Gilbert Badlands	3,680	Geological
Beaver Wash	4,800	Riparian

Source : Utah BLM

Through scoping, BLM received several proposals from external sources to consider new areas for ACEC designation. These proposals will be evaluated in the EIS.

BLM Backcountry Byways

There is one BLM Backcountry Byway in the RFO. The Bull Creek Pass National Backcountry Byway loops across the spine of the Henry Mountains between State Highway 95 and State Highway 276 (see Map 4). The total length of the byway is 56 miles. It crosses the Henry Mountains three times: at Wickiup Pass, Bull Creek Pass, and Penellen Pass.

The Byway's northern access point is 21 miles south of Hanksville off Highway 95. The Byway's southern entrance is on Highway 276 5 miles south of its junction with Highway 95.

The Byway ascends from the desert floor more than 5,000 feet to the alpine high country surrounding the 10,485-foot-high Bull Creek Pass. Along the way, it passes through badlands and buttes, canyons and cliffs, meandering through forested slopes of spruce and ponderosa and aspen, as well as juniper and pinyon pine on the lower slopes. There are expansive panoramic views reaching as far as Shiprock, New Mexico, and Colorado. Wildlife includes mule deer, pronghorn, bighorn sheep, mountain lion, and bison.

The Byway also passes by unique geological features including erosive columnar formations at Little Egypt, the Horn laccolith, and the intrusive domes of Ragged Mountain, Mount Pennell, and Mount Ellen.

Historical structures along the Bull Creek Pass National Backcountry Byway include the few remains of Eagle City, an 1890s gold boomtown, scattered along Crescent Creek below Bromide Basin, and several relic buildings at Trachyte Ranch.

Wilderness and Special Designations—Issues and Opportunities

Designation and management of WSAs and other special areas, including Wild and Scenic Rivers, ACECs, and Backcountry Byways, is a primary issue in development of the RMP. How management of WSAs, wilderness characteristics, and other special areas would affect other resource values and uses was a significant issue identified through public scoping. Most uses that existed at the time of designation of WSAs or other special areas may continue. Additionally, uses that will not impair the wilderness character of WSAs may still be allowed. The RMP and associated EIS will include a careful analysis of the management guidelines for special management areas and how those guidelines affect current and anticipated uses.

Issues relating to wilderness and other special designations were the most frequent type of comment received during public scoping. Comments relating to wilderness expressed both support for and opposition to designation of additional WSAs. Many comments indicated support for existing WSAs and ACECs and requested that the RMP consider additional designations. Conversely, other comments stated WSAs and other restrictive designations had been overused in the past and should not be included in the new RMP. Some of the other topics included non-WSA lands with and likely to have wilderness characteristics, Wild and Scenic River designations, ACECs, wilderness proposals, and uses allowed in these areas.

Wilderness Opportunities

Management of WSAs provides the opportunity to preserve and enhance wilderness resources for their own sake, including the following:

- Representative sample of ecosystems in a natural condition
- Outstanding opportunities for solitude
- Outstanding opportunities for primitive forms of recreation
- Supplemental ecological, geological, and other features of scientific, educational, scenic, and historic value.

WSA management, however, also provides an opportunity to respond to other resource issues, concerns, and opportunities identified for resolution in the RMP, including but not limited to the following:

- Protection of watershed condition, including water quality, soil, and upland and riparian vegetation communities
- Protection of critical habitat for threatened, endangered, and sensitive animal species
- Protection of threatened, endangered, and sensitive plant species
- Protection of wildlife habitat
- Preservation of biological diversity
- Opportunities for educational and scientific study of natural processes
- Repository for paleontological, prehistoric, and historic resources
- Economic value for backcountry recreation, including hunting, horseback riding and packing, hiking and backpacking, river floating, and wilderness therapy programs.

Further, the RMP process provides the opportunity to make management of other resource values and uses consistent with WSA management, including the following:

- Motor vehicle use in WSAs will be limited to existing roads and trails (with exceptions), specific designated routes, or closed where necessary.
- Visual resources (scenery) in WSAs will be managed according to VRM Class I objectives.
- New rights-of-way, or expansion of existing rights-of-way, will not be approved in WSAs (with exceptions).
- New oil, gas, and leases will not be issued in WSAs.

Special Areas Opportunities

Designation and management of Wild and Scenic Rivers, ACECs, and Backcountry Byways present the opportunity to preserve, enhance, manage, and/or provide the following:

- Representative sample of rivers and streams in a free-flowing condition
- Outstandingly remarkable values of rivers and streams

- Resources and natural systems that require special management attention to prevent irreparable damage to those resources and systems
- Natural hazards that require special management attention to protect life and safety
- Opportunities for backcountry driving and associated recreational activities.

The RMP should consider if additional areas should be designated and managed as Wild and Scenic Rivers, ACECs, and Backcountry Byways.

Management of special areas provides an opportunity to respond to other resource issues, concerns, and opportunities identified for resolution in the RMP, including the following:

- Protection of watershed condition, including water quality, soil, and upland and riparian vegetation communities
- Protection of critical habitat for threatened, endangered, and sensitive animal species
- Protection of threatened, endangered, and sensitive plant species
- Protection of wildlife habitat
- Preservation of biological diversity
- Preservation of unique or relict plant communities
- Opportunities for educational and scientific study of natural processes
- Protection of paleontological, prehistoric, and historic resources
- Public health and safety
- Economic value for river floating and backcountry driving opportunities.

Finally, the RMP process provides the opportunity to make management of other resource values and uses consistent with Wild and Scenic Rivers, ACECs, and Backcountry Byway management.

4.0 PLANNING CRITERIA

Planning criteria are constraints that will be considered during the formulation of the resource management planning alternatives. The criteria act as standards on which the alternative decisions may be based. Government regulations (43 CFR 1610.4-2) direct BLM managers to prepare criteria to achieve the following:

- Guide development of the RMP or revision
- ensure that it is tailored to the issues previously identified
- Ensure that unnecessary data collection and analyses are avoided.

It further directs that planning criteria shall generally be based on the following:

- Applicable law
- Director and state director guidance
- Results of public participation
- Coordination with other Federal agencies, State and local governments, and Indian tribes.

Proposed planning criteria, including any significant changes, shall be made available to the public before being approved by the field office manager for use in the planning process. Planning criteria may be changed as the planning process proceeds, based on public suggestions and the findings of the various studies and assessments.

The BLM's Planning Handbook (H-1601-1, p. III-6 and 7) lists development of planning criteria as one of seven "procedural requirements for making land use plan decisions" and gives the following direction**:**

> "Planning criteria are prepared to ensure decisionmaking is tailored to the issues pertinent to the planning effort and to ensure BLM avoids unnecessary data collection and analyses. BLM gives public notice and an opportunity for review of, and comment on, the planning criteria before they are approved."

The RFO RMP and the process used for developing it shall adhere to the following criteria:

- Recognize valid existing rights
- Comply with laws, regulations, executive orders, and BLM supplemental program guidance
- Include management direction for public lands, including split estate lands managed by BLM
- Use and observe the principles of multiple use and sustained yield set forth in the FLPMA and other applicable law (43 U.S.C. 1701 202 (c) (1))
- Use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences (43 U.S.C. 1701 202 (c) (2))
- Give priority to the designation and protection of areas of critical environmental concern (43 U.S.C. 1701 202 (c) (3))
- Rely, to the extent it is available, on the inventory of public lands, their resources, and other values (43 U.S.C. 1701 202 (c) (4))
- Consider the present and potential uses of the public lands (43 U.S.C. 1701 202 (c) (5))
- Consider the relative scarcity of the values involved and the availability of alternative means (including recycling) and sites for the realization of those values (43 U.S.C. 1701 202 (c) (6))
- Weigh long-term benefits to the public against short-term benefits (43 U.S.C. 1701 202 (c) (7))
- Provide for compliance with applicable pollution control laws, including State and Federal air water, noise, or other pollution standards or implementation plans (43 U.S.C. 1701 202 (c) (8))

- Ensure that it is as consistent as possible with existing officially adopted and approved resource related plans, policies, or programs of other Federal agencies, State agencies, Indian tribes, and local governments that may be affected (43 CFR 1610.3-1 (c) (9)).

5.0 SOURCES

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6.0 MAPS